University Bulletin

Series 6 Number 17

# OHIO STATE UNIVERSITY

## COLLEGE

OF

# ARTS, PHILOSOPHY AND SCIENCE

**ANNOUNCEMENTS** 

OF

# GRADUATE WORK

FOR

1902-1903

COLUMBUS
PUBLISHED BY THE UNIVERSITY

Entered at the Postoffice, Columbus, Ohio, as second-class matter



## OHIO STATE UNIVERSITY

## **COLLEGE**

OF

# Arts, Philosophy and Science

## **ANNOUNCEMENTS**

OF

## GRADUATE WORK

FOR

1902-1903

COLUMBUS
PUBLISHED BY THE UNIVERSITY

## DAYS AND DATES.

## 1902

Summer Session, Lake Laboratory, Sandusky June 15 to September 15.				
	tember, 22. tember, 23.			
First Term begins—Registration Day Tuesday, Sept	tember, 23.			
President's Annual Address, (11 A. M.) Friday, Sept	tember, 26.			
Latest Date of Admission to candidacy for a				
degree at the Commencement of June, 1903 Wednesday, Octo	ober 1.			
Latest Date for announcing subject of				
Doctor's thesis Saturday, Nov	vember 1.			
Thanksgiving Recess	ember, 27.			
(11114), 1101	rember, 28.			
Latest Date for announcing subject of				
Master's Thesis Monday, Dece	ember, 1.			
First Term ends Wednesday, Dece	ember, 24.			
Christmas Vacation.				
1903.				
Second Term begins—Registration Day Tuesday. Janu	iary, 6.			
Second Termends Friday, Apri	i1, 3.			
Spring Recess				
Third Term begins—Registration Day Wednesday, April	il, 8.			
Latest Date for submitting Doctor's Thesis Friday, May	v, 1.			
Latest Date for submitting Master's Thesis Monday, June	e, 1.			
COMMENCEMENT Wednesday, June	e, 24.			
Summer Session, Lake Laboratory, Sandusky June 15 to Septen	nber 15.			

## Ohio State University

## Organization

The Ohio State University is a part of the public educational facilities maintained by the State. The governing body of the institution is a board of seven trustees, appointed by the governor of the state and confirmed by the senate, for terms of seven years as provided in the law organizing the University. The original endowment by the United States has been supplemented and the objects of the University promoted by a permanent annual grant from the United States, by special appropriations of the General Assembly, and by a permanent annual grant from the state. In accordance with the spirit of the law under which it is organized, the University aims to furnish ample facilities for education in the liberal and industrial arts, the sciences and the languages, and for thorough technical and professional study of agriculture, engineering in its various departments, veterinary medicine, pharmacy and law. Through the aid which has been received from the United States and from the state it is enabled to offer its privileges, with a slight charge for incidental expenses, to all persons of either sex who are qualified for admission.

The University comprises six Colleges as follows:—The College of Arts, Philosophy and Science, and five professional and technical Colleges: The College of Agriculture and Domestic Science, the College of Engineering, the College of Law, the College of Pharmacy and the College of Veterinary Medicine.

Each College is under the direction of its own Faculty, which has power to act in all matters pertaining to the work of students in that College. The instructional force of the University in all its Colleges in 1901-1902 numbered 101, besides 15 fellows assisting in laboratory and other departmental work. There were 1506 students enrolled.

## The College of Arts, Philosophy and Science

The scope of the College of Arts, Philosophy, and Science may best be understood from the following list of studies which are included in its curriculum. Each study represents several (some of them, many) courses, or subjects: Greek, Latin, German, French, Spanish, Italian, English, Rhetoric, History, Political Science, Administration, Economics, Commerce,

Sociology, Psychology, Ethics, Philosophy, Education, Public Speaking, Mathematics, Anatomy, Bacteriology, Biology, Physiology, Astronomy, Botany, Chemistry, Geology, Physics, Zoology, and a limited amount of work in Drawing, Photography, Art, Mineralogy, Metallurgy, Land Surveying, Thermo-dynamics, Electrical Engineering, Law and Domestic Science. The instructional force of this College numbered, in 1901-1902, 54 regular members and 11 assisting fellows. The enrollment of students was 442, of whom 49 were graduates, pursuing advanced subjects.

## **Buildings and Location of the University**

The University is situated within the corporate limits of the city of Columbus, two miles north of the Union Station and about three miles from the state Capitol. The University grounds consist of three hundred and forty-five acres, bounded east and west by High Street and the Olentangy River, respectively. The western portion, about 235 acres, is devoted to agricultural and horticultural purposes, and is under the management of the College of Agriculture and Domestic Science. The eastern portion is occupied by the principal University buildings, campus, athletic and drill grounds, a park-like meadow, and a few acres of primitive forest.

The grounds are laid out with care, and ornamented with trees, shrubs, and flower beds; and are so managed as to illustrate the instruction in botany, horticulture, forestry, landscape gardening and floriculture.

The University has thirteen buildings devoted to instruction, a boiler house, power house, two dormitories, six residences and several farm buildings. These structures represent an investment for construction of about eight hundred thousand dollars. The equipment and apparatus amount to about one hundred and seventy thousand dollars. The land now occupied as a site, with the farm, is valued at one million five hundred thousand dollars.

The University may be reached by either the North High Street or Neil Avenue electric cars. Those wishing to go to the principal buildings of the University, to the residences on the grounds, or to the athletic field, should take a High Street car going north. Those wishing to visit the Emerson McMillin Observatory, the Veterinary Hospital, Townshend Hall, Horticultural Hall or the dormitories, will find the Neil Avenue cars more convenient.

#### The Libraries

#### THE UNIVERSITY LIBRARY

The University Library contains about forty-four thousand volumes. There are also department libraries, collections of books specially needed in connection with laboratory and class room work deposited in the several departments. During the University year the Library is open six days in the week, vacations and legal holidays being excepted. From Monday until Friday the hours are from 7:30 a. m. until 9:30 p. m.; Saturday from 7:30 a. m. until 4 p. m.

#### STATE LIBRARIES

Students are privileged in being near the two State Libraries. The Ohio State Library numbers more than 77,000 volumes and is a circulating one for all the citizens of Ohio. It is of great value for students, especially in English literature, history, economics and political science. The State Law Library is the largest and most complete law library in the State. It contains complete sets of the English, Scotch, Irish, Canadian, United States and State reports, statutes and digests. The important legal periodicals are on file.

#### CITY LIBRARIES

The students of the University, as residents of Columbus, have access to the City Library and the Public School Library, under the usual regulations. The City Library numbers 33,500 volumes. The Public School Library numbers about 52,000 volumes.

#### Laboratories

The laboratories of the University are the most extensive in Ohio and are well equipped for graduate and special research. Omitting those which are exclusively for the professional and technical Colleges of the University, the following list of laboratories, and their directors gives an indication of the opportunities available for scientific research and investigation:

> Bacteriological, Professor Bleile. Botanical, Professor Kellerman. Chemical. Professor McPherson. Entomological, Professor Osborn.

Geological:

Historical, Professor Prosser. Petrographical, Professor Bownocker. Histological, Professor Bleile. Metallurgical, Professor N. W. Lord. Physical, Professor Thomas. Physiological, Professor Bleile.

Psychological, Assistant Professor Haines.

Zoological, Professor Osborn.

Brief mention of some of these laboratories is made in the subsequent pages of this bulletin. For fuller descriptions of the laboratory buildings and equipments consult the Annual Catalogue of the University.

Special attention should be called to one laboratory—the Lake Laboratory-maintained by the University at Sandusky, during the summer vacation, where it occupies a convenient building, the former Hatchery building, 22x26 feet, located by the city water works and close to the waters of the bay and convenient to good boarding places. It has good facilities in the way of boats, tables, aquaria, collecting appliances, while microscopes, reagents, etc., are fully supplied from the home laboratory. It offers courses in General Botany, Ecology, Morphology, General Zoology, Comparative Anatomy, Entomology, Ichthyology, Ornithology. There are opportunities

for special research in any branch of biology. The professors of the department of Botany and Zoology with their assistants constitute the staff of instruction.

The courses are open to students and teachers generally and students of the University may receive credit for courses equivalent to University courses. For graduate students in these lines this laboratory affords exceptional opportunities. For further information write for special circular on the Lake Laboratory.

#### Seminaries

As a large part of the work of graduate students consists of individual research carried on under the personal direction of the professor in charge, seminaries have been organized in several of the departments to ensure the systematic supervision of such work. By this arrangement advanced students within a department are brought together for cooperative research and for comparison and criticism of methods and results. At present the following seminaries are organized, some of them exclusively for graduates, and others for graduates and advanced undergraduates:

American History, Professor Knight.
Chemistry, Professor McPherson.
Economics, Professor Clark.

Education, Associate Professor Major.

Ethics, Professor Scott.
French, Professor Bowen.
German, Professor Eggers.

Latin, Assistant Professor Elden. Philosophy, Assistant Professor Haines.

Political Science, Professor Knight,

Assistant Professor Smith.

Rhetoric, (Assistant Professor McKnight.

Sociology, Professor Clark,

Assistant Professor Hagerty.

#### Societies and Clubs

In addition to flourishing literary societies there are several voluntary organizations of a scientific, technical or special character, composed of instructors and advanced students. Among them are the Biological Club, the Chemical Association, the Political Science Club, the English Club, the Philosophy Club. These organizations hold fortnightly or monthly meetings at which formal papers are read and discussed, reports of experiments and investigations given and the current literature of the special field reviewed.

## Expenses

The incidental fee of eighteen dollars a year is the only fee charged to all students (except those holding scholarships), and is payable one-third

at the opening of each term. Such laboratory fees as are charged to students pursuing laboratory courses in science are detailed in the University catalogue. A graduation fee of ten dollars is required of each person receiving one of the higher degrees from the University, and this fee must be paid before the degree is conferred.

The cost of living, which is the chief item of expense, is as reasonable in Columbus as in most college towns. Furnished rooms may be secured at prices ranging from one dollar a week upward, and the cost of table board is from two dollars and twenty-five cents upward. In the matter of expense much is dependent upon the personal taste and habits of the student. There is nothing about the State University requiring a large expenditure of money; economy and careful living are the rule. The University distinctly encourages these things, and will use every means to discourage a lavish expenditure of money as inconsistent with the best interests of the student or of university life. Two hundred and fifty dollars may be regarded as sufficient money to provide for reasonable expenses for a year at the University.

## **Fellowships**

To encourage graduates of this University, and of other similar and approved institutions in this State, to continue their studies and to undertake advanced work leading to the higher degrees, the University authorities have established fellowships in several departments. These demand about one-half of the time of the fellow for laboratory or other similar assistance—as far as possible along the line of his graduate study. The remainder of his time is given to graduate work. The fellowships pay from \$250 to \$300 for the University year. At present there are three such fellowships in Chemistry and in Rhetoric, two in Botany, and one each in Economics, Mathematics and Zoology, and a few others in the technical and professional colleges.

There are also two fellowships endowed by Mr. Emerson McMillin, of New York, known as the Emerson McMillin Fellowship in Astronomy, and the Emerson McMillin Fellowship in Economics. The former has an annual value of \$300, the latter of \$250. These differ from the University fellowships in that the holder is not required to render assistance in the department, and is expected to devote his entire time to graduate study. Appointments to all fellowships are made annually in April or May for the following year on recommendation of the head of the department.

## Aids to Moral and Religious Culture

A weekly convocation is held at 10 o'clock on Wednesdays in the University Chapel. During this hour all other University exercises are suspended; and the entire Faculty and student body are expected to attend this exercise. It consists of a brief devotional service, followed by an address by the President, some member of the Faculty, or an invited guest.

One of the most commendable organizations in the University is a branch of the International Young Men's Christian Association, organized

in 1883. This association is directly affiliated with the work for young men directed by the college department of the State Y. M. C. A. work. Services are held weekly, and voluntary classes for Bible study are successfully organized. The local association has a secretary who devotes his entire time to work among the young men. The management has rented a house at 1610 Highland Street as a headquarters for the Association. It is hoped that in the near future a permanent home for the Association may be provided.

An equally commendable organization is the Young Women's Christian Association, affiliated with the State organization. Religious meetings are held regularly at noon on Tuesdays. Occasional meetings for social purposes are held as provided for by the organization.

New students are invited to write for a hand book of information concerning the University, or for information concerning rooms or boarding to Paul C. Foster, General Secretary Y. M. C. A., 1610 Highland Street, Columbus, Ohio.

## University Catalogue

Each of the six colleges of the University publishes in May of each year a College Bulletin or Catalogue, which may be had on application. These six Bulletins taken together represent the entire work of the University. All persons desiring more detailed information in regard to the College of Arts, Philosophy and Science than they find in the following pages are referred to the Bulletin of the College. The general annual Catalogue of the University will appear in August, 1902, copies of which may be had on application to the Executive Office, University Hall.

## College of Arts, Philosophy and Science

### Officers

REV.	WILLIAM OXLEY	THOMPSON, D. D	University Grounds
		President of the University	y <b>.</b>

#### GRADUATE DIVISION

#### Committee

(The Administrative Board for Graduate Work.)

PROFESSOR GEORGE WELLS KNIGHT, Ph. D., Chairman, 15 University Hall
PROFESSOR WILLIAM MCPHERSON, Ph. D20 Chemical Hall
PROFESSOR ALLEN CAMPBELL BARROWS, D. D31 University Hall
PROFESSOR HERBERT OSBORN, M. Sc Biological Hall
THE DEAN of the College, ex officio44 University Hall

## Departments Organized for Graduate Instruction

Philosophy, Latin Language and Literature, Greek Language and Literature, Metallurgy, Physics, American History and Political Science, Mathematics, Germanic Languages and Literatures, Anatomy and Physiology, Botany, Romance Languages and Literatures, Rhetoric and English Language, English Literature, Chemistry, Zoology and Entomology, Astronomy, Economics and Sociology, Geology, European History, Education.

## Graduate Work

## Organization

In order better to meet the rapidly increasing demands made by graduates of Ohio Colleges upon the University for graduate instruction, the Faculty of the College of Arts, Philosophy and Science has recently reorganized the scheme of graduate work. The object of the present plan is to emphasize and utilize in greater degree the facilities which the University affords for advanced students and to secure a more effective and systematic arrangement and supervision of the higher work. While the graduate courses and instruction are organically within the College of Arts, Philosophy and Science, the supervision and administration of all matters connected with the graduate work has been lodged in an administrative board, known as the Graduate Committee, and consisting of the Dean and four other members chosen from the Faculty. The Chairman of the Graduate Committee is Professor George W. Knight, to whom all communications should be addressed.

#### Admission

Registration as a graduate student of this college is open to all graduates of the College of Arts, Philosophy and Science of this University, and to graduates of other colleges of this University, or of other universities or colleges who satisfy the Graduate Committee that they are qualified to pursue with profit the work here offered in the lines of study which they wish to carry on.

Graduates of institutions of which the undergraduate courses of study are not substantially equivalent to the course prescribed in this college for the bachelor's degree will be required to do an additional amount of undergraduate work, or to prolong their term of residence, before being admitted to full candidacy for a higher degree.

Bachelors of this College or of other institutions who do not wish to become candidates for a higher degree may be admitted as special graduate students.

Application for admission as a graduate student should be addressed to the Chairman of the Graduate Committee. Full details should be forwarded of the candidate's previous course of study, the degree desired, and the special preparation already had in the major and minor subjects to be pursued. As the first question to be decided is whether the degree already taken by the applicant is substantially the equivalent of the degree given in this College, full information on this point is required. This should include a general statement of the character of the course pursued, with special reference to the amount of mathematics, science and the languages, including English. Blank forms of application may be obtained from the Registrar of the University.

The second question touches the qualifications of the applicant to enter upon advanced work in the special departments of study in which he desires to work. In order to determine this, a detailed statement is necessary of the previous course of study in the major and minor subjects which the applicant desires to pursue. Official evidence of the above statements must be submitted before the applicant is admitted to full registration.

No graduate student will be registered as a candidate for a higher degree later than October first of the academic year in which he seeks the degree.

#### Course of Instruction

For Candidates for Higher Degrees. Unlike the curriculum for undergraduates, the work of candidates for higher degrees is not confined to specific courses of instruction regularly offered in the College. Each student chooses a major study and one or two minor studies, which must be approved by the Graduate Committee before he enters upon his work. This may consist of attendance upon specified courses or of private research or reading and report thereon. The professors in charge of the studies chosen constitute a special committee, the professor in charge of the major study being the chairman, to arrange the details of the work comprising the major and minor studies, to supervise the work of the student, to examine and pass judgment on the thesis and to conduct the final examination.

Upon the completion of the prescribed course a final examination upon the entire work undertaken for the degree is held under the direction of the special committee, except that at the option of the committee the examination upon the minor or minors may be held whenever such minor or minors are completed.

A thesis upon some subject within the field of the major study is required of all candidates for the doctor's degree; and is also required of all candidates for the master's degree unless waived in individual cases by the Graduate Committee on the recommendation of the special committee in charge of the candidate's work.

With the approval of the Graduate Committee a candidate for a higher degree may elect specific courses, additional to the major and minor studies. For such election any course offered in the College of Arts, Philosophy and Science is open to candidates who satisfy the head of the department that they are qualified to pursue it with profit. The amount of such additional elective, if any, which the student may take must in each case be determined by the Graduate Committee, and it is to be understood that such work,

if allowed, will not be credited towards the degree for which the candidate is working.

For Graduate Students not Candidates for a Degree. Graduate students who are not seeking a higher degree are not required to designate major and minor studies, but may select their work with a view to the special purpose for which they are in attendance at the University. Any course of instruction announced in the College of Arts, Philosophy and Science is open for election by graduate students not candidates for a degree who satisfy the head of the department that they are qualified to pursue it with profit. But the list of elections so chosen must in each case be approved by the Graduate Committee before the student enters upon his work.

Should such student subsequently desire to become a candidate for a higher degree the Graduate Committee will determine how much, if any, of the work previously done as a graduate student can be counted as a part of the major and minor studies requisite for the degree sought.

## Requirements for Higher Degrees

The University confers two higher degrees, Master of Arts and Doctor of Philosophy, upon the completion of approved courses of resident graduate study.

The Master's Degree. The degree of Master of Arts is open to those holding the Bachelor's degree who have been admitted to full candidacy as indicated above (see Admission, second paragraph). A residence of at least one year at this University wholly devoted to the work for the degree is required. With the consent of the committee the work of the candidates for the Master's degree may be distributed over more than one year. The Master's degree is not conferred for study in absentia.

A holder of the Bachelor's degree will be recommended for the degree of Master of Arts upon the completion of the prescribed term of residence, and passing a final examination in the course of study laid out for him, covering a major and one or two minor subjects approved by the Graduate Committee, and unless waived by the same committee, the submission and acceptance of a thesis, on some subject within the field of the major study. The major study must be in advanced work; the minor study or studies may, with the approval of the Graduate Committee, be of a more elementary character.

The subject for the Master's thesis must be chosen and approved by December 1st, and the completed thesis must be submitted not later than June 1st. A typewritten copy of the accepted thesis must be deposited with the University before the candidate will be recommended for a degree.

The Doctor's Degree. The degree of Doctor of Philosophy is open to those holding the Bachelor's degree who have been admitted to full candidacy as indicated above (see Admission, second paragraph), and who also fulfill the terms of this and the next paragraph. At least three years of resident graduate work is required, but on approval of the Graduate Com-

mittee the first year or the first two years may be spent at another university which offers equivalent graduate work.

Save in the cases of persons who come properly accredited from a graduate school of some other university no student will be enrolled as a candidate for the degree of Doctor of Philosophy until he has been in residence as a graduate student at this University for one year. Formal application for enrollment as a candidate for the degree must be made at least one year before the candidate expects to present himself for final examination. No person will be admitted to candidacy for the degree who does not possess at the time of enrollment a reading knowledge of French and German.

Each candidate for the Doctor's degree must pursue a major study and two allied minor studies, one of which may be within the same department as the major. All of them must be advanced, specialized work. The degree is intended to represent not a specified amount of work, covering a specified time, but long study and high attainment in a special field.

Each candidate is required to prepare a thesis within the field of his major study, involving an extended research or investigation and constituting an original contribution to knowledge. The thesis for the Doctor's degree is one of the most essential factors of the candidate's work, since it measures his accuracy and power of independent investigation. The preparation of an acceptable thesis will usually require the greater part of an academic year.

After the acceptance of the thesis the candidate will be examined by his special committee upon the entire work undertaken for the degree, except that at the option of the committee the examination on the minors may be held whenever such minors are completed.

Each candidate is required to have his accepted thesis printed and to deposit with the University library fifty copies to be used for exchange purposes.

The subject of the thesis for the Doctor's degree must be chosen and approved by the special committee by November 1st of the college year in which the applicant expects to take the degree. The completed thesis must be submitted not later than May 1st. The final examination will be held not later than June 1st.

## Courses of Instruction

The following list presents a brief description of the advanced courses offered in the various departments of the College of Arts, Philosophy and Science suitable to form constituent parts of "major" and "minor" studies. Discrimination has not been attempted in all cases between purely graduate courses and those which are also open to advanced undergraduates. Many of the courses mentioned are of the latter class, but are suited to the needs of many holders of a bachelor's degree. So far as possible the announcements indicate in fairly specific terms the preliminary training necessary for entrance upon each of the courses or subjects.

It should be remembered also that in many cases the work of graduate students consists of individual reading, experiment, investigation and research in some special line or subject not covered by any announced "course" and not involving or calling for attendance upon lecture or class. Such graduate work is obviously incapable of announcement and description as a "course." For further information as to any course announced in the following pages, and regarding the special work mentioned above, consult the head of the department concerned or send for the department circular.

In the following announcements the figure in parenthesis immediately following the subject of the course is the number of the course as it appears in the College Bulletin and University Catalogue, where a fuller description is in some instances given.

## American History

(See History)

## Anatomy and Physiology

(Biological Hall, Rooms 12 and 20.)

The facilities provided for study in anatomy, bacteriology, histology and physiology are excellent. The laboratory is supplied with skeletons, papier-mache manikin, and many models, including models of the eye, ear, larnyx, etc.. The apparatus of the department for work in bacteriology and physiology is of the best and most approved construction, and is adapted

to the accurate investigation of bacterial forms, as well as to the thorough performance of the fundamental physiological experiments. Myographs, spectroscopes, microscopes and the necessary chemical outfit are also provided. For work in histology the equipment includes twenty-four individual tables for student experiments, each table being supplied with a good microscope, microscopical accessories, microscopical re-agents; and for advanced work, the needed apparatus for instruction in the various methods of hardening, staining, imbedding, section-cutting and injection. The laboratory also has excellent microtomes, imbedding baths and other essentials of a histological outfit. The equipment of the laboratory makes it possible to offer a large range of work for the choice of students in advanced courses.

The following courses for advanced students presuppose at least one year's collegiate work, including lectures and laboratory work in Human Anatomy and Physiology (the equivalent of course 1 in Physiology as described in the Arts College Bulletin) and a course in Chemistry, including laboratory work. The work of the graduate student in the following courses will be laid out to meet to some extent individual cases when there is a specific end in view.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Physiological Laboratory (9). Three times a week, three terms. Laboratory hours arranged. Professor Bleile.
- Physiological Laboratory (11). Five times a week, three terms. Hours to be arranged. Professor Bleile.
- **Bacteriology** (12). Twice a week, three terms. Hours to be arranged. Professor Bleile, Assistant Professor Morrey.
- Bacteriology (13). Three times a week, three terms. Hours to be arranged. Professor Bleile, Assistant Professor Morrey.

#### Astronomy

(The Emerson McMillin Observatory.)

THE EMERSON McMILLIN OBSERVATORY is the gift of Mr. Emerson McMillin of New York. The equipment consists of a twelve-inch equatorial telescope, mounting by Messrs. Warner & Swasey, objective by Mr. Brashear with a large and powerful spectroscope by Mr. Brashear. This instrument is adapted to use either one or two prisms or a grating and is provided with a double set of objectives one corrected for the visual and one for the photographic rays; a positive micrometer with a seven-inch circle by Messrs. Warner & Swasey; a combined zenith telescope and transit instrument of three inches clear aperture by Mr. G. N. Saegmueller; a sidereal clock by Clemens Riefler of Munich; a comparator by Carl Ziliss, a four inch portable equatorial by Alvin Clark; a chronograph by Warner & Swasey; sextants, chronometers, meteorological instruments, etc. In addition to the above, Mr. McMillin's gift provides for an excellent astronomical library.

As a prerequisite for the advanced work in Astronomy the student, in addition to a collegiate course in general Astronomy must have had Mathematics through the calculus. Students wishing graduate work in Astrophysics as noted below need not have had the general Astronomy provided they have had a good collegiate course in the theory of Physics and at least one full year of Laboratory Physics (the equivalent of Physics 2 and 12 as described in the Bulletin of the Arts College p. 75,) and Mathematics through the calculus.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Astronomy, Geodesy and Least Squares (2). Lectures on practical Astronomy, supplemented by practice with the instruments of the Emerson McMillin Observatory. Text-book, Doolittle. Three times a week, three terms. Professor H. C. Lord.
- Advanced Astronomy (4). Lectures, Reading and Laboratory work from 3 to 5 hours a week, three terms. Courses will be offered in Theoretical Astronomy or Astrophysics, as students may elect. Hours to be arranged. Professor H. C. Lord.

## **Botany**

## (Botanical Hall.)

THE GENERAL BOTANICAL LABORATORY is on the second floor of Botanical Hall. It is equipped with compound microscopes of the Bausch and Lomb, the Leitz and other patterns; and accompanying each is a tray of tools and a case of reagents. There are more than fifty dissecting microscopes, also charts, and several minor pieces of apparatus for experiments in vegetable physiology. Three smaller rooms are also provided as laboratories for special work, as well as a dark room for photography. Other facilities for the illustration of the courses in botany, and for practical training in the same, are: A general herbarium, including flowering plants, ferns, mosses, fungi and algae; a state herbarium, a collection of fruits and seeds, valuable timbers, woods, grasses and various economic products of the vegetable kingdom; ornamental grounds and woodland, planted with a large variety of evergreen and deciduous trees and shrubs; and a greenhouse and propagating house with a fair collection of native and exotic plants.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Prerequisites: Work in advanced Botany for a full year daily, in addition to the elementary Botany of the preparatory high school.

- Advanced Laboratory Work in Histology and Microtechnique (26).

  Three terms. Laboratory open daily. Assistant Professor Schaffner.
- Laboratory and Field Work in Systematic Botany (27). Three to five hours. Three terms. Laboratory open daily. Professor Kellerman.
- Research Work in Ecology (31). Three terms. Laboratory open daily.

  Assistant Professor Schaffner.

Research Work in Morphology and Physiology (29). Three terms, Laboratory open daily. Assistant Professor Schaffner.

Prerequisite:—In addition to a course in Elementary Botany the graduate student must have had daily work for a full year in general Morphology and Physiology including laboratory work; and also special work, at least half a year, preparatory to the research work to be undertaken.

Monographic Work (30). Three terms. Laboratory open daily. Professor Kellerman.

Prerequisites:—Besides the usual elementary course in Botany, the graduate student must have had daily work for a full year in general Morphology, Physiology, including Ecology, and Systematic Botany. Also special work at least half a year, preparatory to the monographic work to be undertaken.

#### Chemistry

(Chemical Hall, Rooms 7, 14, 18, 20, 21, 22, 24, 25).

The laboratories of the department are located in Chemical Hall and accommodate from three to four hundred students. Each laboratory is equipped with all the necessary conveniences—water, gas, electric lights, distilled water, piped from a large still in the attic, steam ovens, automatic air blasts, suction pumps, etc. The department is liberally supplied with the best apparatus and materials for both lecture room and laboratory work. Each student has his own desk with drawers and locker. All supplies are procured from the chemical store room which has always on hand a complete stock of all necessary materials.

As a requisite for admission to the following courses, students must have thorough preparation in General Inorganic Chemistry, Qualitative and Quantitative Analysis.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Organic Chemistry (8, 9). Laboratory, lectures and quiz. The laboratory work includes the preparation of typical organic compounds. Five hours credit. Three terms. The laboratory is open afternoons and Saturday mornings. Time of lecture arranged with the instructor. Professor McPherson.
- Physical Chemistry (30). Lectures and recitations. A discussion of the subject as outlined in Walker's chemistry. Three hours credit. Second and third terms. Associate Professor Henderson.
- Analytical Chemistry (33). Laboratory, lectures and recitations. Lectures and recitations include: (a) a general review of qualitative and quantitative methods, and (b) the theory of analytical operations and reactions. Oswald's Scientific Foundations of Analytical Chemistry is used as a text book during part of the year. Four or five hours credit. Three terms. Hours arranged with the instructor. Assistant Professor Foulk.

- Historical Chemistry (25). Lectures and recitations. Three hours.

  Third term. Hours arranged with the instructor. Professor
  Norton.
- Advanced Chemistry (27). Laboratory and reference work. Three to five hours credit. Hours arranged with the instructor.
- (a) Organic. Arranged for students who have completed course 8 and 9. The work includes the further preparation of typical organic compounds, their purification and analysis. Professor McPherson.
- (b) Inorganic. This course is especially designed for students who are desirous of studying the methods of preparation and the properties of a series of inorganic substances; or for those who desire to continue the study of certain chapters of inorganic chemistry. Associate Professor Henderson.
- (c) Analytical. Special topics such as the critical study of methods, etc.

  Assistant Professor Foulk.

#### II. FOR GRADUATES.

- Chemical Seminary (26). Advanced students meet for the discussion of special topics and current literature. Once a week. Three terms. Professor McPherson and the instructors in the department.
- Organic Chemistry (28). Lectures on special topics. This course must be preceded by courses 8 and 9 and preferably by course 27(a). Hours arranged with the instructor. Professor McPherson.
- Research Work, Library and Laboratory Work (29). Five to ten hours. First, second and third terms. Hours to be arranged. Professor McPherson, Associate Professor Henderson, Assistant Professor Foulk.

## **Economics and Sociology**

(University Hall, Rooms 17, 18.)

The University, through the efforts and generosity of its friends, is possessed of a unique equipment for study purposes in these lines. This equipment comprises a large collection of railroad, municipal and school bonds; of stocks of all kinds; of letters of credit, drafts, foreign bills of exchange, bills of lading, checks, enclosures, statements, insurance policies, trust certificates, notes, mortgages and all the necessary forms of business papers; also collections of coins illustrative of the various periods in our monetary history, foreign coins, and scrip; also sets of maps and charts and a Kiepert-Commercial Globe 80 cent. in diameter. Ample facilities for statistical work are provided and a seminary room set apart for the use of laboratory material, documents, etc., is always open to advanced students. It is the policy of the department to make the statistical investigations and research work of advanced students contributory to the permanent equipment of the department, thus enriching the facilities from year to year with material of scientific and pedagogical value.

The University possesses a special library in economics consisting of several hundred volumes and pamphlets. Over thirty financial, commercial and trade journals are received and filed regularly.

Students expecting to do graduate work in this department should be well equipped in history, economics, and philosophy and should by all means possess a reading knowledge of French or German or both. The location of the University in Columbus will be found to be a great advantage for research in economic lines.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Sociology and Statistics (13). Lectures and laboratory work. Text, Mayo Smith's Sociology and Statistics. Once a week through the the year. Assistant Professor Hagerty.
- Economic Literature and Legislation (14). A round-table study of current industrial affairs; reviews of magazine articles, books, reports on bills, etc. Once a week through the year. Professor Clark.
- Seminary in Economics (15). Through the year, two hours a week at one meeting. The work for 1902-1903, is outlined as follows: At each alternate meeting a practical problem will be presented and discussed. The other meetings will take up the study of Classical Economists: English, German and American. Professor Clark.
- Economic Thought and Institutions (20). First term. Twice a week. Professor Clark. (Not offered in 1902-03.)
- Growth and Development of Social Thought and Institutions (21).

  Twice a week through the year. Assistant Professor Hagerty.

  (Not offered in 1902-03.)

#### II. FOR GRADUATES.

- Advanced Economics (17). From one to ten hours a week, three terms. Hours arranged with students individually. The aim of these courses is to offer the student an opportunity to specialize to any degree he may desire along the various lines within the field of the department. Elections will naturally fall under the following heads:
  - (a) Theoretical Problems. (b) Historical Problems. (c) Practical Problems. (d) Finance. (e) Commerce. (f) Sociology (Theoretical or Practical). (g) Statistics. (h) Teacher's Course and Training for Fellowship.
    - When several students elect the same line of work, they may constitute themselves a group and a seminary will be organized as a nucleus for such work.
- Seminary in Sociology (17f). Also open to advanced undergraduates on permission of the instructor. Two hours a week throughout the year. Professor Clark and Assistant Professor Hagerty.

#### Education

(University Hall, Rooms 51 and 54.)

The minimum requirement for admission to graduate work in the department of Education is Philosophy 18, 19 or equivalent, and three courses in the department of Education. (See announcement of the College of Arts, Philosophy and Science, 1902-1903, p. 44.)

The following courses offered by other departments of the University are especially valuable for graduate students of education: Philosophy, 20, 21, 29, 42; Anatomy and Physiology, 1; Zoology, 21; Sociology, 11; European History, 1, 2, 3. (See Bulletin of the College of Arts, Philosophy and Science.)

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Science of Education (5). This course aims to afford a wide view of the science of education, endeavoring to develop a consistent theory of education. It is especially intended for students who expect to deal with the larger problems of education which confront the superintendent or principal. It should help all specialists to see the place of their particular grade or subject in the developmental process of the individual pupil. Lectures, readings and reports. Three hours a week. Three terms. Assistant Professor Haines.
- Modern Educational Systems (6). A comparative study of education in Germany, England and France. The course will deal briefly with the history of these systems, but chiefly their present organization. The interest centers in the secondary education of those countries. Lectures, reading and reports. (Not offered in 1902-1903.)
- Secondary Education (7). The history, curriculum, organization and administration of secondary education in the United States. The course will be concerned mainly with the problem of the public high school, and intended primarily for those who are preparing to become high school teachers or principals. Three hours a week. Three terms. Associate Professor Major.
- Educational Classics (8). The aim of this course will be to make a critical and comparative study of such classics as Plato's Republic Rousseau's Emile, Pestalozzi's Leonard and Gertrude, Froebel's Education of Man, Herbart's Science of Education, Spencer's Education. Lectures, reading and reports. Twice a week. Three terms. Associate Professor Major.
- Seminar (9). Designed for students who wish to investigate special problems in education. Members of the course will work independently, but will meet once a week for general discussion of some subject under investigation. Open only to students who have worked extensively in either philosophy or education. Three terms. Two hours a week. Associate Professor Major.

## English Literature

(University Hall, Room 31.)

For graduate work in this department the prerequisites are the same as for the department of Rhetoric and English Language, and an acquaint-ance with the outlines of the history of England. The work in English should include as much of the history of the development of English Literature as is secured in twelve term-hours of "period" courses (2 to 6 inclusive and 18) in this College, exclusive of preparatory work.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Literary Problems (16). Twice a week, through the year. A series of topical studies. Lectures followed by illustrative readings selected from the entire range of our literature: written reports and discussions, Professor Barrows.
- Masterpieces: A Study of Literary Types (17). Three times a week through the year. The study of the origin and development of literary types, the best examples in English being chosen for basis. The types will include the drama, the epic, the idyll, the lyric, and in prose the novel, the short story and the essay. Associate Professor Taylor.
- **Current Literature** (19). Twice a week, through the year. Associate Professor Taylor.
- Thesis Course (23). Twice a week, through the year. This course is designed for those who wish to make an extended investigation of a literary topic. The work will be either (a) a continuation of course 16 open to those who have taken that course; or (b) an enlargement of course 17 open to those who are enrolled in course 17. (a) Professor Barrows. (b) Associate Professor Taylor,

#### II. FOR GRADUATES.

- **Translations** (20). Twice a week, through the year. A study of the indebtedness of English to other literatures, and of various problems of general literature. Professor Barrows.
- Masterpieces: A Course for Teachers (21). Five times a week, through the year. Lectures in outline, to be developed by the student, on the literary aspects of each period, biographical studies of the authors of the masterpieces studied; extended criticism of masterpieces selected in consideration of their importance in the development of literature, and taken up in chronological order. An advanced review of the subject, designed for those who intend to become teachers. Professor Barrows.
- The Development of Literary Types (22). Three times a week, through the year. A course in comparative criticism, the types in English literature being referred to their models in classic or romance literature. It calls for a reading knowledge of French or German, and some acquaintance with Greek and Roman literature. Associate Professor Taylor.

## Entomology

(See Zoology and Entomology.)

## European History

(See History.)

#### French

(See Romance Languages and Literatures.)

## Geology

(Orton Hall, Rooms 1, 4, 5, 7 and 13.)

The University is able to present unusual advantages for the study of Geology. By an act of the Legislature it has been put in possession of all the collections made by the late Geological Survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio. In its ample quarters the department offers exceptionally good opportunities for work in the lithological, petrographical and modeling laboratories. ORTON HALL is designed for the permanent accommodation of the large geological collection of the University and for work and instruction in the department of Geology. The central and rear portion is occupied by the geological and paleontological museums. The petrographical laboratory is located on the second floor. In the basement a room is used for work in geographical modeling, the finished models being afterward placed in the collection of such models in a room set apart for the purpose on the second floor. basement accommodates also the museum of economic geology. The paleontological laboratory or working room is located on the second floor.

The catalogue of the museum contains more than 10,000 entries; but as only one number is as a rule given to a fossil or mineral species, the individual specimens make an aggregate list of many thousands in addition to the catalogue list.

The student before entering upon graduate work in geology should have had the general courses in physiography (No. 17) and geology, inorganic, historical and field; or geographic (Nos. 11, 12, 13; or 18) or their equivalent. If he intends to specialize in Historical Geology he should have had in addition to the above, general courses in zoology and botany; or if in Inorganic Geology, then general courses in chemistry, mineralogy and crystallography.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Economic Geology. (6). Lectures and assigned reading. The nature of ores, their classification and origin. The metals of the United States, their distribution, abundance, modes of occurence and origin. The

non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. In the discussion of the non-metals emphasis will be laid on the products of Ohio. Prerequisites, courses 11 and 12. Three times a week. Professor Bownocker.

- Paleontology. (14). Careful training in systematic classification which may be used in the philosophical study of the development of plant and animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. Fossils afford the most reliable data for identifying and correlating geologic formations, and the critical study of fauna is a field especially adapted to independent research. Laboratory, museum and field work. Two to five hours. Three terms. This course may be undertaken at the beginning of the second or the third term. Professor Prosser.
- Areal Geology. (15). Instruction in the methods of preparing geological maps and reports. The student compiles from a geological report a map with sections showing geologic structure, and later traces the outcrops and prepares a geological map of some region. Two to five hours. First and thirá terms. Prerequisite: courses 11, 12, 13 and 14. Field work and laboratory. Professor Prosser.
- Petrography. (19). Laboratory and lectures. Optical crystallography, with practical determination of rock-forming minerals, macroscopically and microscopically. Study of the igneous rocks in the hand specimen and thin section. Twice a week, three terms. The Sturtz rock collection and Voight Hochgesang thin sections of typical minerals and rocks will be studied. Professor Bownocker.

#### II. FOR GRADUATES.

- Advanced Historical Geology. (16). Work in paleontology and stratigraphical geology for students who have had course 14. Three terms. Field work and laboratory. Professor Prosser.
- Research Work. (20). Field, laboratory and library study in Inorganic or Historical Geology. Outline of work and time to be arranged with individual students. Three terms. Preceding courses in Inorganic or Historical Geology are prerequisite. Professor Bownocker or Professor Prosser.

## Germanic Languages and Literatures

(University Hall, Rooms 30 and 32.)

The department of Germanic Languages and Literatures is in charge of the instruction in German and some of the related languages and literatures. Courses in general philology are also offered by this department.

The preparation required for the advanced courses is as follows:

Three years of German for courses 11, 14, 15, 16, 17, 18, 26, 27; three years of German and of Latin for courses 19, 20. Courses 23, 24, 25 must have been preceded by 20. A limited knowledge of foreign languages is desirable for 21.

- Faust I and II. (11). Twice a week, three terms. The consent of the professor in charge will have to be secured. Students are expected to take both parts. Professor Eggers.
- Gothic. (14). Twice a week, first term. This course is purely linguistic and aims to lay a good foundation for subsequent work, in language. The relation between Gothic and later dialects is emphasized. Associate Professor Mesloh. (Not given in 1902-1903.)
- Old High German. (15). Three times a week, second term. A natural sequence to course 14. The attention of the student is not only directed to the archaic forms and syntax, but also to the best literary monuments. Associate Professor Mesloh. (Not given in 1902-1903.)
- Middle High German. (16). Three times a week, third term. The poems of the Minnesingers, especially those of Walther von der Vogelweide, and one of the mediaeval epics will be studied, principally from a literary standpoint. Professor Eggers. (Not given in 1902-1903.)
- Old Norse. (17). Twice a week, first term. This course is intended as an introduction to the literature as well as the language. Some prose saga will be read. Associate Professor Mesloh.
- History of the German Language. (18). Twice a week, second term.

  This course aims to give a sound knowledge of the historical development of the German language. Associate Professor Mesloh.
- Comparative Grammar. (19). Twice a week, third term. Meringer's Indogermanische Sprachwissenschaft. Henri's Comparative Grammar of English and German. After a general survey of the whole field the relation between English and German is carefully studied. Associate Professor Mesloh.
- Sanskrit. (20). Twice a week, three terms. Lectures introductory to the study of Indo-Germanic philology. Associate Professor Mesloh.
- Phonetics. (21). Once a week, first term. A series of lectures discusses the nature of the various sounds of language, their production and and interrelation. A knowledge of German is not essential for this course. Associate Professor Mesloh.
- Seminary. (26). Two hours a week at one meeting. Hours to be arranged. Professor Eggers. (Not offered in 1902-1903.)

#### II. FOR GRADUATES.

- Introduction to the Veda. (23), Three times a week, first term. Lanman's Reader. Hillebrandt's Chrestomathy. Associate Professor Mesloh. (Not offered in 1902-1903.)
- Elements of Pali. (24). Three times a week, second term. Frankfurter's Pali Handbook. Reading of selections from the Jatakas and

- the Dhammapadam. Associate Professor Mesloh. (Not offered in 1902-1903.)
- Old Persian. (25.) Three times a week, third term. Jackson's Avesta Grammar and 'Reader. Spiegel's Altpersische Keilinschriften. Associate Professor Mesloh. (Not offered in 1902-1903.)
- **German Philosophy.** (27.) Two times a week, three terms. Selections from the chief German philosophers will be read in the original. Open only to advanced students in philosophy. Professor Eggers.

## Greek Language and Literature

(University Hall, Rooms 37, 29 and 28.)

All courses except those in Ancient Art presuppose at least four years' study of the language.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- **Thucydides.** (13.) Book I or Book VII. First term. Three times a week. Associate Professor Hodgman.
- Demosthenes: Olynthiacs and Philippics. (14.) Second term, three times a week. Associate Professor Hodgman.
- **Greek Lyric Poets, or Theocritus.** (15.) Third term. Three times a week. Associate Professor Hodgman.
- Attic Drama. (16.) Lectures and discussions. First term. Twice a week. Professor Smith.
- **Euripides.** (17.) Two plays. Second term. Twice a week. Professor  $Smith_{\bullet}$
- Aeschylus; The Agamemnon. (18.) Third term. Twice a week. Professor Smith.
- Epic Poetry. (19). Lectures, with reading of Hesiod's Works and Days. First term. Three times a week. Professor Smith.
- **Greek Comedy.** (20). Lectures with reading of the Clouds of Aristophanes. Second term. Three times a week. Professor Smith.
- Post-classical Greek. (21). Lucian's Dialogues. Third term. Three times a week. Professor Smith.
- Ancient Art. (22). Lectures on Architecture. First term. Twice a week. Professor Smith. (Not offered in 1902-1903.)
- Ancient Art. (23). Lectures on Sculpture. Second term. Twice a week.

  Professor Smith. (Not offered in 1902-1903.)
- Private Life of the Greeks. (24). Lectures. Third term, twice a week. Professor Smith. (Not offered in 1902-1903.)
- **Greek Philosophy.** (25). Lectures; with readings of Xenophon's Memorabilia. First term. Twice a week. Professor Smith.

- Plato; Gorgias or Protagoras. (26). Second term. Twice a week. Professor Smith.
- **Historical Grammar.** (28). Lectures on the principles that govern the development of the language. Once a week. Through three terms. Associate Professor Hodgman.

## History

## I. American History

(University Hall, Rooms 15, 27, 18 and 48.)

The library resources available for study and research in this field are exceptionally good. In addition to general and special secondary works, the University library contains an almost complete set of United States government publications from the foundation of the government, as well as large collections of State documents, and many colonial documents and archives. The State Historical Society library, now housed at the University, is especially strong in colonial material, and in the publications of State historical societies. The State Library contains a vast amount of material on national, state and local history, and numerous files of old newspapers. The combined resources of these libraries, added to the stores of official Ohio documents and manuscripts in the State House, afford a rare equipment for thorough study in American history and institutions.

The courses named below presuppose a good foundation course of at least a year of collegiate character in the political history of the country from the early colonial period; also a good collegiate course in European history and in English political history. At least a fair knowledge of American political institutions is expected.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Political History of Slavery in the United States to 1850. (4). A study of the development of slavery in America and its relation to government, legislation and political organization until the Compromise of 1850. Lectures and special reports. Three times a week, first term. Professor Knight.
- Secession, Civil War and Reconstruction, 1850=1876. (5). A study of the secession movement; the causes and effects of the downfall of slavery, and the reorganization of the States after the Civil War. Lectures and special reports. Three times a week, second term. Professor Knight.
  - Open to those who have had course 4.
- American Diplomatic History. (6). An historical study of the foreign relations, problems and policy of the United States as shown in the principal negotiations and treaties from 1776 to 1900. Lectures and special investigations. Three times a week, third term. Professor Knight.

- History of Political Parties, 1774=1900. (7). A detailed study of the origin, development and structure of political parties in the United States, with particular attention to their social composition, geographical distribution, organization and political methods. Lectures, parallel reading, quizzes and reports. Three times a week throughout the year. Assistant Professor Smith.
- Seminary for Research Work in American History and Political Sci<sup>\*</sup> ence. (10). Two hours (at one meeting), three terms. Professor Knight and Assistant Professor Smith.
  - Open only to those who have had two full collegiate courses in American history and at least one collegiate course in political science.
- The Teaching of American History. (11). A course in methods of teaching American history, especially in the secondary schools, designed for advanced students preparing themselves as teachers.

  Once a week, second and third terms. Professor Knight, Assistant Professor Smith.

#### II. FOR GRADUATES.

- Graduate Seminary in American History and Institutions. (12). Somelimited field will be made the subject of co-operative study each year by the seminary. So far as possible the investigation will be in the sources. The subject for 1902-1903 will probably be the Revolutionary Period. Two hours a week at one meeting, three terms. Professor Knight.
- Individual Investigation. (13). Each year special courses of varying scope are mapped out to meet the needs of individual graduate students. For 1902-1903 these lines of investigation will lie principally in the period from 1800 to 1876, and will touch the slavery issue at several points. Under the personal direction of the instructor each student carries on his reading and investigation independently, reporting at stated intervals to the instructor. Professor Knight.

## II. European History

(University Hall, Rooms 7, 17, 36.)

The following courses are intended to acquaint those qualified to enter them with an intimate knowledge of the special period or subject concerned, to give the student a comprehensive acquaintance with the best authorities, and practice in the written and oral exposition of assigned topics. Courses 5, 6, 1, 2, 3 or equivalent, (that is to say, collegiate courses in Greek, Roman, and Mediaeval and Modern European history—see bulletin of the College of Arts, Philosophy and Science for 1902-1903, p. 31) must precede them, and course 4 should be preceded by course 14. A reading knowledge of French and German will be most helpful.

- Political and Constitutional History of England. (4). An advanced course. Three times a week, three terms. Associate Professor Siebert.
- Period of Protestant Reformation. (7). An advanced course dealing with reformational movements from the time of the death of Dante (1321), to the Council of Trent (1502). Lectures, collateral reading and investigations. Three times a week, first term. Associate Professor Siebert.
- The French Revolutionary and Napoleonic Periods, 1789=1815. (8).

  An intensive study of the causes and effects of the French Revolution, and of Napoleon's struggle with Europe. Lectures, collateral reading and special reports. Three times a week, second term.

  Associate Professor Siebert.
- History of Europe in the Nineteenth Century. (9). Lectures, assigned readings and special reports. Three times a week, third term. Associate Professor Siebert.
- History of European Colonies. (10). A study of the colonial enterprises of Portugal, Spain, England, the Netherlands, France and Germany. This course begins with the age of geographical discoveries and traces the evolution of colonies to the present time. Lectures, assigned readings and investigations. Three times a week, first and second term. (Omitted in 1902-1903.)
- The Eastern Question. (11). An advanced course treating of the relations of European powers with Turkey and Russia by means of lectures, special reports and required readings. Course 9 gives a special preparation for this course. Three times a week, third term. (Omitted in 1902-1903.)
- The History of France. (12). From the ninth to the middle of the eighteenth century. Special attention will be given to French institutions. Lectures, required readings and special reports. Twice a week, first term. Associate Professor Siebert.
- Documentary and Bibliographical Studies in European History. (13).

  Practical exercises in bibliographical work and the use of original documents. Lectures and special reports. Second and third terms. Two hours a week in one session. Associate Professor Siebert.

## Latin Language and Literature

(University Hall, Rooms 28, 29, 37 and 39.)

Before entering upon graduate work in this department the student should have had, in addition to the usual preparatory course of four years, three years of collegiate study devoted to Cicero, Livy, Horace, Tacitus, Pliny, Latin Comedy, and Latin writing.

The plan of study for the second degree (A. M.), with Latin as the major subject, should not include more than one of the courses 7-17a.

The ability to use French or German works of reference, and a good knowledge of ancient history will be found especially useful. Courses 22, 23 and 24 in Greek are recommended.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

### Roman Life in the First Century of the Empire (7, 8, 9).

Tacitus: Historiæ or Annales. Three times a week. First term.

Juvenal: Satires. Three times a week. Second term.

Martial: Selected Epigrams. Three times a week. Third term. (The foregoing are not offered in 1902-1903).

#### Roman Comedy; Roman Ethics (10, 11, 12).

Plautus: Menaechmi and Rudens. Three times a week. First term. Associate Professor Hodgman.

Cicero: De Finibus or De Officiis. Three times a week. Second term. Associate Professor Hodgman.

Seneca: Medea, De Vita Beata, De Providentia, De Tranquillitate Animi. Three times a week. Third term. Associate Professor Hodgman.

## Roman Philosophy (13, 14, 15, 16).

Cicero: De Natura Deorum. Three times a week. First term.

Lucretius: De Rerum Natura. Three times a week. Second term.

Horace: Satires. Three times a week, Third term.

Horace: Epistles. Three times a week. First term. Professor Derby.

(The first three in this group are not offered in 1902-1903.)

## Biography and Descriptive Poetry (17, 17a).

Suetonius: Divus Julius and Divus Augustus, or Tacitus, Annals. Three times a week. Second term. Professor Derby.

Late Latin: Three times a week. Third term. Professor Derby.

**Teachers' Course** (18). Twice a week. This course is designed especially for students who intend to teach Latin. First term: Cæsar; lectures, private reading, practical exercises in syntax, assigned topics in military antiquities. Second term: Cicero; lectures on Roman oratory and style, rapid reading of selected orations, assigned topics on Roman life and political antiquities. Third term: Vergil; lectures, studies in versification with especial reference to the diction and hexameter of Vergil, interpretation of selected portions of the text. Assistant Professor Elden.

Antiquities (20). Twice a week. Three terms. Roman private life will be studied during the first term. The second and third terms will be devoted to political and legal antiquities, including finance and provincial administration. Professor Derby.

- \*Latin Literature (21). Twice a week. First and second terms.
- \*Latin Philology, History, Field and Problems (22). Twice a week.

  Third term.
- \*Linguistics and Inscriptions (23). Twice a week. Three terms. Lectures on the growth of Latin sounds and inflections. Collateral reading of inscriptions and from Quintilian. Associate Professor Hodgman.
- \*Advanced Latin Writing (24). Twice a week. Three terms.
- Pro-Seminary (25). Principles of textual criticism and methods of independent research. The work for 1902-03 will consist of the textual and exegetical study of selected Satires of Horace, combined with the more rapid reading of other portions of the text, and will be supplemented by lectures upon the history and development of Roman Satire. Special topics will be assigned to the student for investigation and report. This course should be preceded or accompanied by course 18. Assistant Professor Elden.
- \*Ovid (27). Fasti. Once a week. Three terms. Associate Professor Hodgman.
- \*Historical Latin Grammar (28). Once a week. Three terms. Assistant Professor Elden.

#### **Mathematics**

(University Hall, Rooms, 39, 41, 43 and 45.)

Prerequisites for the Courses in group I below: One year in college algebra and trigonometry and for the mechanics calculus in addition. For the work in group II, the student must have completed the average college course in algebra, trigonometry, analytical geometry and calculus.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- **Analytical Geometry** (33). Five times a week, third term. Professor Bohannan, Assistant Professor Kuhn.
- Calculus (41, 42, 43). Five times a week through the year. Open on credit for courses 21, 22, 23, or for courses 31, 32, 33. Professor Bohannan, Assistant Professor Kuhn.
- **Mechanics** (51, 52, 53). Five times a week through the year. Associate Professor Boyd.

#### II. FOR GRADUATES.

- **Higher Mathematics** (25). From one to ten hours a week may be selected from the following courses:
  - (a) Determinants; (b) Modern Geometry; (c) Modern Higher Algebra; (d) Advanced Analytical Geometry (Plane); (e) Advanced

<sup>\*</sup>Not given in 1902-1903.

Calculus; (f) Space Analytics; (g) Differential Equations; (h) Theory of Equations; (i) Higher Plane Curves; (j) Groups; (k) General Function Theory; (l) Elliptic Functions; (m) Potential Function; (n) Spherical Harmonics; (o) Mathematical Electricity; (p) Mathematical Optics; (q) General Mathematical Physics; (r) Higher Geodesy.

Hours to be arranged. Professor Bohannan.

## Metallurgy and Mineralogy

(Chemical Hall, Office Room 5.)

Graduate students for the following course must have had as a prerequiste a good general collegiate course in physics (including laboratory) and at least two years in chemistry.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Metallurgical Laboratory (5). Lectures and laboratory work. Laboratory practice in the analysis of iron and steel, fuel and slags, and the assays of lead, copper and zinc ores by wet methods, using approved methods as practiced in technical laboratories of metallurgical works. In the case of students with adequate preparation special work will be given in gas analysis and calorimetric tests on fuels. Five laboratory periods a week. Three terms. Professor N. W. Lord.

## Philosophy

(University Hall, Rooms 33, 49, 50 and 51.)

At least one year of preparatory study in philosophy covering psychology and logic, is a necessary prerequisite to graduate work in this department and for course 44 the preparatory study must include ethics. For courses marked with a star (\*) the previous study of the history of philosophy is also required.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Conspectus of Philosophy (23). Three times a week. First term. Professor Scott.

**Theory of Knowledge** (24). Three times a week. Second term. Professor Scott.

Metaphysics (25). Three times a week. Third term. Professor Scott.

Advanced Psychology (26). Twice a week. Three terms. Dr. Davies.

Introduction to Experimental Psychology (29). Primarily a practice course. It aims to familiarize the student with the methods and some of the results of psychological experimentation. Zoology 21, (Comparative Neurology) must precede or accompany this course. Three times a week. Three terms. Assistant Professor Haines.

- Research Work in Experimental Psychology (30). Twice a week.

  Three terms. The psychological laboratory is open to students with suitable preparation to prosecute original investigations. The arrangement of hours will be subject to the needs of the individual student. At least two hours must be taken. Assistant Professor Haines.
- \*Plato. (31). Twice a week. Three terms. Dr. Davies.
- \*Aristotle. (32). Twice a week. Three terms. Dr. Davies.
  - Only one of these two courses will be given each year, but it will be course 31 or 32, as the class may elect.
- \*Descartes and Spinoza. (33). Three times a week. First term. Dr. Davies.
- \*Locke and Leibnitz. (34). Three times a week. Second term. Dr. Davies.
- \*Berkeley, Hume and Reid. (35). Three times a week. Third term. Dr. Davies.
  - The three immediately foregoing courses constitute a year's work and are given alternately with the following course, to which they are preparatory.
- \*Kant, Fichte, Schelling and Hegel. (36). Three times a week. Three terms. Not offered in 1902-1903.
- \*Later German Philosophy. (37). Three times a week. Three terms. Assistant Professor Haines.
- \*Recent and Current Philosophy. (38). Three times a week. Three terms. Assistant Professor Haines.
  - Only one of the two foregoing courses will be given in 1902-1903. Which one shall be given will be decided on consultation with those who elect it.
- Comparative and Abnormal Psychology. (42). The course will be of service to any student of psychology by bringing definition and perspective into his views of normal mental phenomena. The exceptional facilities in Columbus, for studying abnormal mental phenomena will be utilized. Two hours, three terms. Assistant Professor Haines.
- **Advanced Logic.** (43). Two hours a week, three terms. Assistant Professor Haines.
- **Advanced Ethics.** (44). Two hours a week. Three terms. Professor Scott.
- Esthetics. (45.) Two hours a week. Three terms. This course will consider the subject from three points of view. 1, Historical. 2, Psychological. 3, Philosophical. Dr. Davies.

#### II. FOR GRADUATES.

\*Philosophy of Science. (27). Twice a week. Three terms. Professor Scott.

- Course 27 has for its purpose to investigate the postulates and concepts of physical science. It will include such subjects as casuality, mechanism and teleology, the existence and nature of matter and mind, the relation between them, and man's place in nature.
- \*Philosophy of Religion. (28). Twice a week. Three terms. Professor Scott.
  - This course includes a study of the nature of religion, the foundations of religious belief, the relations of philosophy to religion, and religious problems, such as the existence and nature of God, the problem of evil, and human immortality. The two foregoing courses, are alternative. Which of them will be given in 1902-03 will be decided after consultation with those who elect the work.
- \*Pyschological Seminary. (39). Two hours a week. Three terms. Dr. Davies.
- \*Ethical Seminary. (40). Two hours a week. Three terms. Professor Scott.
  - This course will be devoted in 1902-1903 to the historical and critical study of one or more of the great problems of ethics. The work will consist of assigned readings, papers and discussions.
- \*Philosophical Seminary. (41). Two hours a week. Three terms.

  Assistant Professor Haines.

This course for the year will be devoted to Epistemology.

## Physics

(University Hall, Rooms 10, 14, 23 and 24.)

The department has an excellent equipment of apparatus, to which additions are constantly being made. The apparatus includes a large collection of pieces for illustration of the general lecture room work, but is principally chosen for accurate measurement in the laboratory. Among the principal pieces of apparatus are a dividing machine by Fauth & Co.; chronometers by Parkinson & Frodsham and by Negus, the latter a breakcircuit; a chronograph by Fauth & Co.; a Hipp's chronoscope; cathetometers by Salleron and by the Geneva Society; Regnault's apparatus for vapor tension, for expansion of gases and for specific heat; Melloni-Tyndall apparatus for radiant heat; Rutherford and Rowland diffraction gratings; Rowland's spectrum photographs; spectroscopes by Brashear, Browning, Apps and others; Duboscq's complete apparatus for projections in polarized light; a variety of sound apparatus from Koenig; portable and quadrant electrometers; galvanometers of high and low resistance; standard resistance coils, with Cavendish laboratory certificate; several sets of resistance coils and bridges; a Kew magnetometer; Kelvin standard balances; Weston ammeters and voltmeters; standards of self-induction; standard battery cells; photometric standards and photometers; X-ray apparatus, etc. Under the laws of Ohio the professor of physics is ex officio State Sealer of Weights and Measures, and all of the standard weights, measures and balances received from the United States government are in the rooms of the department.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Laboratory. (13). Three to five times a week. Three terms. Prerequisites, a year's work in General Physics of college grade and a course in the laboratory, (Physics 2 and 12). May be taken as a graduate minor. Professor Thomas, Professor Cole, Assistant Professor Kester.
- Theoretical Physics. (14). Three to five times a week. Three terms. For 1902-3 the following subjects are offered:
  - (a) Advanced Light, based upon Preston's "Theory of Light," with frequent reference to the original memoirs of Newton, Fresnel, Young, Fraunhofer, Michelson, Rowland, Stokes, Zeeman, etc.
    (b) Radiation, with special reference to the electro-magnetic theory of light.
    (c) Theory of Heat.
    (d) Theoretical Physics. Christiansen. A course in Differential Equations or Analytical Mechanics is desirable as preparation.
    (e) Evolution of Experimental Physics, with special reference to recent methods and results.
    - Prerequistes for each of the above subjects, a year of College Physics (Physics 2) and Calculus. A laboratory course in Physics must precede or accompany. Professor Thomas, Professor Cole, Assistant Professor Kester.

#### II. FOR GRADUATES.

Advanced Laboratory. (15). Three or five times a week. Three terms. Research work. Prerequisites, two years of laboratory work in Physics. Professor Thomas, Professor Cole.

## Physiology

(See Anatomy and Physiolgy.)

## Political Economy

(See Economics and Sociology.)

#### Political Science

(University Hall, Rooms 15, 27, and 18.)

The advanced work in political science is in all cases closely dependent upon historical knowledge, the amount and kind varying for different courses. In general the graduate student should have had a collegiate course in modern political institutions, European and American, (the equivalent of Political Science 1, Arts College Bulletin, 1902-1903, page 76), and in English and American political history. A reading knowledge of either French or German is especially desirable.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- The Government of Dependencies. (6). A study of the government of dependencies by the home country, and of the political and legal relations between them. Twice a week, first term. Professor Knight.
- Colonial Institutions. (7). A study of local institutions, civil service and administration, and the development of local self-government in the leading colonies of today. Twice a week, second term. Professor Knight. This must be preceded by the course in Dependencies.
- Municipal Government. (8). A study of the development, status and government of modern municipalities, and a comparative study of recent American municipal charters. Twice a week, third term. Professor Knight.
- Theories of Government, Sovereignty and Political Liberty. (10). An introductory survey of the origins of political theories, followed by an historical study of the political doctrines expressed in American constitutions and a critical examination of these doctrines in the light of recent European and American thought. Twice a week throughout the year. Assistant Professor Smith.

Open to those who have obtained the instructor's permission.

- Comparative Politics. (12). A study of parties and political methods in legislation, administration and elections in the United States, Great Britain and its colonies, France, Germany, and the leading European countries. Twice a week throughout the year. Assistant Professor Smith.
  - Open for the year 1902-3 to those who have taken two full years of work in European or American History.
- Seminary. (American History. 10). For investigation and discussion of political institutions and administration, especially American national, state and local. Two hours a week through the year. Professor Knight, Assistant Professor Smith.

# Rhetoric and English Language

(University Hall, Rooms 38, 40, 42, 44, 55.)

For admission to graduate work in this department the student should have worked in English Languages and Literature during at least two years of his college course. He should be well-grounded in Psychology and should have a reading knowledge of two languages besides English.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Problems in Rhetoric and Criticism. (12). Two hours a week through the year. This course begins with a short series of lectures on the Development of Rhetorical and Critical Theory, after which each

- student undertakes the thorough investigation of some one problem in rhetoric and criticism, reporting results at the meeting of the seminary each week. Professor Denney.
- The Teaching of English. (13). Once a week through the year. A discussion of principles and methods, plans for courses, and the reports of the English Conferences. Each member of the class will present a paper each term upon a subject assigned for investigation. Professor Denney.
- Old English Prose and Poetry. (16). Twice a week through the year.

  Text-book, Sweet's Anglo-Saxon Reader. At first, attention will be paid to the purely linguistic features, the relations of Early English to the kindred Teutonic languages; later will be studied the beginnings of English literature in prose and poetry. Assistant Professor McKnight.
- Beginning of English Story. (17). Beowulf and minor Old English narrative poems studied in connection with the related epic and romantic stories in Norse and in early German. First term. Celtic (mainly Arthurian) story in English studied in connection with the related stories in Celtic and in French. Second term. English stories belonging to the Charlemange cycle. Third term. Assistant Professor McKnight.
- Middle English Prose and Poetry. (18). Twice a week through the year. First will be studied the development in sound and in orthography; later, the transition in literature, and the evolution of modern yerse.

#### II. FOR GRADUATES.

Graduate Seminary. (20). (a) Rhetorical Theory and Criticism. Professor Denney. (b) Old Middle English Philology. Assistant Professor McKnight.

# Romance Languages and Literatures

(University Hall, Rooms 35 and 34.

For admission to courses 4 to 13 inclusive in French, the student must have studied that language two full years, four hours a week each year. For admission to courses 14 and 15 in French, the student must have pursued the work for three full years, four hours a week each year. For admission to course 2 in Spanish, one full year's work, four hours a week, is required.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

#### A. FRENCH.

French Comedy. (4). Three hours a week. First term. Study of the growth of French Comedy, with work centering upon Moliére, Regnard and Beaumarchais. Lectures and collateral reading. Professor Bowen.

- French Tragedy. (5). Three hours a week. Second term. Lectures and readings. Corneille, Racine and Voltaire. Critical study of Le Cid, Andromaque, Esther and Zaïre. Professor Bowen.
- Seventeenth Century Prose. (6). Three hours a week. Third term.

  Critical study of Descartes, Pascal, Bossuet and others, supplemented by lectures. Professor Bowen.
- Advanced Prose Composition. (7). One hour a week throughout the year. Cameron's French Composition. Intended for advanced students who desire special training on the practical side of the language. Professor Bowen.
- Literary Criticism in France. (8). Two hours a week. First term.

  Readings and lectures. Selections from Sainte Beuve, Faguet,

  Lemaître and others. Alternates with course 11. Not offered in
  1902-1903. Associate Professor Bruce.
- Recent French Prose. (9). Two hours a week. Second term. Rapid reading, with lectures. Critical study of some of the leading prose writers of the present, such as Bourget, Daudet, Loti, Zola and others. Alternates with course 12. Not offered in 1902-1903. Associate Professor Bruce.
- Practice in Speaking and Writing French. (10). Based on Daudet's Stories. Two hours a week. Third term. Students wishing to elect this course must have the consent of the instructor in charge. Alternates with course 13. Not offered in 1902-1903. Associate Professor Bruce.
- French Travel=Writers (11). Two hours a week. First term, Readings and lectures. Scenes of travel from Gautier, Hugo and Dumas. Associate Professor Bruce.
- **Eighteenth Century Prose** (12). Two hours a week. Second term. Readings and lectures. Selections from Voltaire (ed. Cohn and Woodward) or others. Associate Professor Bruce.
- Advanced Conversational Practice (13). Based on stories of Coppee and Maupassant. Two hours a week. Third term. Students wishing to elect this course must have the consent of the instructor in charge. Associate Professor Bruce.
- French Seminary A (14). Three hours a week throughout the year. The subjects for the year 1902-1903 will be: (1) Lamartine and De Musset, and (2) Chateaubriand and the Precursors of Romantiscism. Professor Bowen.
- French Seminary B (15). Three hours a week throughout the year. Given biennially; not offered in 1902-1903. For 1903-1904 the subjects will probably be: (first half-year) French Literature before the Seventeenth Century: (second half-year) the Development of the French Novel. Professor Bowen.

#### B. Spanish.

Advanced Spanish (12). Two hours a week throughout the year. The modern novel; classical drama; Don Quixote; with lectures; advanced composition and conversation. Professor Bowen.

#### Sanskrit

(See Germanic Languages.)

# Sociology

(See Economics and Sociology.)

# Zoology and Entomology

(Biological Hall, Rooms 3, 4, 7, 8, 9 and Third Floor.)

The department occupies the first and third floors of Biological Hall providing two lecture rooms, one general and five special laboratories, museums, besides room for storage, work shops, aquaria, cold-storage, photography, etc. The laboratory equipment includes microscopes, microtomes, incubators, injectors, etc., for most approved methods of work in morphology, embryology and neurology. The collections include a fine-series of skeletons, a number of large mammals, series of the birds of Ohio of the birds of North America, of Ohio fishes, of mollusks and especially rich collections of insects particularly in Odonata, Hemiptera and Diptera.

The department possesses a special library the nucleus of which was the scientific library of the late Professor Kellicott which was generously donated to the department. This has been increased by gifts of special papers by a number of the leading investigators of the country and will be enlarged as rapidly as possible. The private library of the professor is also accessible for reference.

Students entering upon graduate work in this department are expected to be familiar with the elements of chemistry, physics and botany; to have a reading knowledge of French and German and to have had at least two years work in zoology, the equivalent of Zoology 1 (general zoology) and Zoology 2 (Comparative Anatomy of Vertebrates). The department can offer good facilities in embryology, neurology and various phases of entomological work.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Invertebrate Morphology. I. (15). Three or five times a week. First term. Devoted to lower invertebrates, especially Protozoa and Coelenterata. Lectures and laboratory. Professor Osborn.
- Invertebrate Morphology. II. (16). Three or five times a week. Second term. Will usually be devoted to Worms and Mollusks. Lectures and laboratory. Professor Osborn.

- Invertebrate Morphology. III. (17). Three or five times a week. Third term. Usually devoted to Arthropoda. Lectures and laboratory. Professor Osborn.
- Invertebrate Embryology (18). Three or five times a week. Three terms. Korschelt and Heider used as a basis. Lectures and laboratory. Assistant Professor Landacre.
- Comparative Neurology (21). Three or five times a week. Three terms. Includes study of brain and spinal cord in all classes of vertebrates. Edinger Lectures on the Central Nervous System is followed and numerous treatises and special papers consulted. Lectures and laboratory. Assistant Professor Landacre.
- Cytology (22). Three or five times a week. Three terms. Hertwig, Cell and Tissues, and Wilson, The Cell in Development and Inheritance. Professor Osborn.
- Entomology (23). Three or five times a week. Three terms. Advanced practical course for those wishing to investigate some special groups of insects or to fit themselves for professional work in Entomology. Lectures, laboratory and field work. Professor Osborn.
- Research Work (25). Five or ten times a week. Time arranged with individual students. Professor Osborn.

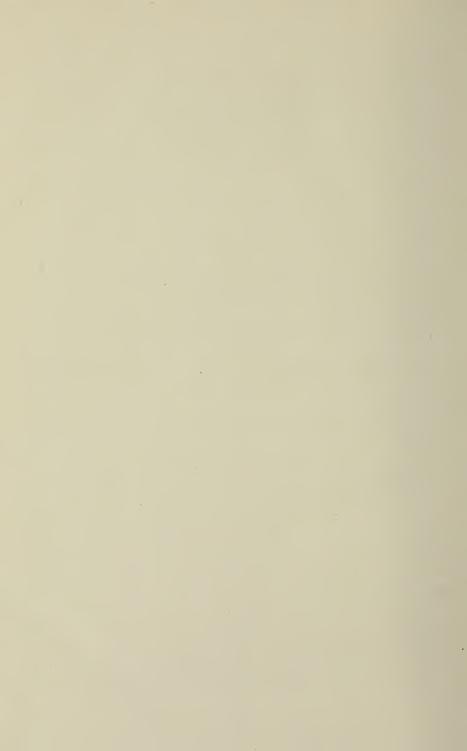
# Graduate Students\*

# 1901=1902

ABBOTT, ROYAL ALBERT, B. PH Ann Arbor, Mich. Rhetoric, English Language.
Andrews, Catherine Emily, B. A., Wellesley CollegeColumbus Chemistry, Agricultural Chemistry.
BEMAN, LAMAR TANEY, B. A., Western Reserve UniversityCleveland American History, Political Science, Economics.
BOHN, FRANK ARTHUR, B. PH., M. AOlmsted Falls
BRIDWELL, JOHN COLBURN, B. Sc., Baker University Baldwin, Kansas Botany, Zoology.
CONVERSE, EDWARD JASPER, B. A., (B. D., Yale University) Columbus
COOK, MELVILLE T., A. M., DePauw UniversityGreencastle, Ind. Zoology, Botany.
COURSAULT, JESSE HARLIAMAN, B. A., M. A
DAVIES, ARTHUR ERNEST, B. D., Ph. D., Yale UniversityColumbus
Derby, Alice Greenwood, B. Ph
DETMERS, FREDERICKA, B. Sc., M. Sc
DONEY, CARL GREGG, B. Sc., LL. B., (M. A., O. W. U.)Columbus Philosophy.
DUBOIS, WILBUR L., B. Sc., Ohio Wesleyan UniversityCincinnati Chemistry, Metallurgy, Physics.
DUNLAP, LOUISE, B. A., Oxford College
EISENLOHR, BERTHOLD AUGUST, B. PH
EWALT, CLARA CONVERSE, B. PH
HANCE, HARRY THOMAS, B. Sc
HARRINGTON, EVALINE, B. PH., Wooster University
HAVES, SETH, B. SC
HINE, JAMES S., B. Sc
KAUFFMAN, HENRIETTA CHRISTINE, B. PH

<sup>\*</sup>The subjects constituting the work of candidates for higher degrees are indicated under their names. The subject first named is the major study.

KLEIN, DAVID, B. PH
Landacre, Francis Leroy, A. B
LENTZ, FLORENCE, B. PH
LINVILLE, CLARENCE PHILANDER, B. Sc
LLOYD, ERASTUS GUY, A. B., Otterbein UniversityWesterville
Long, Joseph, B. A., Ohio Wesleyan UniversityColumbus Philosophy.
MARSH, MABEL ELSIE, B. A., Lake Erie College
MILLS, WILLIAM C., B. Sc
MITZENBERG, ALLENA MAY, B. PH
Morrey, Charles Bradfield, A. B
McKinney, Frank C., A. B
NAUSS, RALPH WELTY, B. SC
NORRIS, JOHN S., B. PH
PERRY, ELMA BROOKS, B. PH., B. SC
PITTS, GRACE LENORE, A. B., A. M Columbus
RASOR, SAMUEL EUGENE, B. Sc
RHOADES, U. R., B. ScZoology, Botany.
SANDERS, JAMES G., Ph. B., Otterbein University Westerville Zoology, Botany.
SAVRE, CHARLES BOYD, A.B
SCHAEDEL, HENRY, A. B., Berea College
SCHAFF, MAE B., B. PH
SCOTT, MARY BOLE, A. B
Talbot, Mignon, A. B
Travis, John F., A. B
TYLER, FRED JARED, B. SC
Watson, Edward Thomson, B. Sc
WILLIAMS, ANNA ERNESTINE, B. PH











University Bulletin

Series 7 Number 17

# OHIO STATE UNIVERSITY

College of Arts, Philosophy and Science

GRADUATE SCHOOL

I LITTE ST

ANNOUNCEMENTS

UNIVERSITY OF ILLINOIS LIBRARY
1903-1904

COLUMBUS
PUBLISHED BY THE UNIVERSITY

Entered at the Postoffice, Columbus, Ohio, as second-class matter



# OHIO STATE UNIVERSITY

# College of Arts, Philosophy and Science

# GRADUATE SCHOOL

**ANNOUNCEMENTS** 

FOR

1903-1904

COLUMBUS
PUBLISHED BY THE UNIVERSITY

# CALENDAR.

# 1903

Summer Session, Lake Laboratory, San-			
duskyJ	une 15 to Se <sub>l</sub>	ptember 15.	
Entrance Examinations (8 A. M.)	Monda <b>y,</b> Tuesday,	September September	21. 22.
First Term begins—Registration Day	Tuesday,	September	22.
President's Annual Address (11 A. M.)	Friday,	September	25.
Latest Date of Admission to candidacy for			
a degree at the Commencement of June,			
1904	Thursday,	October	1.
Latest Date for announcing subject of Doc-			
tor's thesis	Monday,	November	2.
Thanksgiving Recess	Friday,	November	26.
Latest Date for announcing subject of Mas-	Thursday,	November	27.
ter's Thesis	Tuesday,	December	1.
First Term ends	Wednesday,		23.
Christmas Vacation.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
1904			
Second Term begins — Registration Day	Tuesday,	January	5.
Second Term ends	Friday,	April	1.
Spring Recess.			
Third Term begins—Registration Day	Wednesday,	April	6.
Latest Date for submitting Doctor's Thesis	Monday,	May	2.
Latest Date for submitting Master's Thesis	Wednesday,	June	1.
COMMENCEMENT	Wednesday,	June	22.
Summer Session, Lake Laboratory, San-			
duskyJ	une 15 to Se	ptember 15.	

# Ohio State University

#### Organization

The Ohio State University is a part of the public educational facilities maintained by the State. The governing body of the institution is a board of seven trustees, appointed by the governor of the state and confirmed by the senate, for terms of seven years as provided in the law organizing the University. The original endowment by the United States has been supplemented and the objects of the University promoted by a permanent annual grant from the United States, by special appropriations of the General Assembly, and by a permanent annual grant from the state. In accordance with the spirit of the law under which it is organized, the University aims to furnish ample facilities for education in the liberal and industrial arts, the sciences and the languages, and for thorough technical and professional study of agriculture, engineering in its various departments, veterinary medicine, pharmacy and law. Through the aid which has been received from the United States and from the state it is enabled to offer its privileges, with a slight charge for incidental expenses, to all persons of either sex who are qualified for admission.

The University comprises six Colleges, as follows:—The College of Arts, Philosophy and Science, and five professional and technical Colleges: The College of Agriculture and Domestic Science, the College of Engineering, the College of Law, the College of Pharmacy and the College of Veterinary Medicine.

Each College is under the direction of its own Faculty, which has power to act in all matters pertaining to the work of students in that College. The instructional force of the University in all its Colleges in 1902-1903 numbered 105, besides 20 fellows assisting in laboratory and other departmental work. There were 1,712 students enrolled.

## The College of Arts, Philosophy and Science

The scope of the College of Arts, Philosophy, and Science may best be understood from the following list of studies which are included in its curriculum. Each study represents several (some of them, many) courses. or subjects: Greek, Latin, German, French, Spanish, Italian, English, Rhetoric, History, Political Science, Administration, Economics, Commerce, Sociology, Psychology, Ethics, Philosophy, Education, Public Speaking, Mathematics, Anatomy, Bacteriology, Biology, Physiology, Astronomy, Botany, Chemistry, Geology, Physics, Zoology, and a limited amount of work in Drawing, Photography, Art, Mineralogy, Metallurgy, Land Surveying, Thermo-dynamics, Electrical Engineering, Law and Domestic Science. The instructional force of this College numbered, in 1902-1903, 62 regular members and 10 assisting fellows. The enrollment of students was 525, of whom 42 were graduates, pursuing advanced subjects.

## Buildings and Location of the University.

The University is situated within the corporate limits of the city of Columbus, two miles north of the Union Station and about three miles from the state Capitol. The University grounds consist of three hundred and forty-five acres, bounded east and west by High street and the Olentangy River, respectively. The western portion, about 235 acres, is devoted to agricultural and horticultural purposes, and is under the management of the College of Agriculture and Domestic Science. The eastern portion is occupied by the principal University buildings, campus, athletic and drill grounds, a park-like meadow, and a few acres of primitive forest.

The grounds are laid out with care, and ornamented with trees, shrubs, and flower beds; and are so managed as to illustrate the instruction in botany, horticulture, forestry, landscape gardening and floriculture.

The University has sixteen buildings devoted to instruction, a boiler house, power house, two dormitories, six residences and several farm buildings. These structures represent an investment for construction of about nine hundred thousand dollars. The equipment and apparatus amount to about one hundred and seventy thousand dollars. The land now occupied as a site, with the farm, is valued at one million five hundred thousand dollars.

The University may be reached by either the North High Street or Neil Avenue electric cars. Those wishing to go to the principal buildings of the University, to the residences on the grounds, or to the athletic field, should take a High street car going north. Those wishing to visit the Emerson McMillin Observatory, the Veterinary Hospital, Townshend Hall, Horticultural Hall or the dormitories, will find the Neil Avenue cars more convenient.

#### The Libraries

#### THE UNIVERSITY LIBRARY.

The University Library contains about forty-seven thousand volumes. There are also department libraries, collections of books specially needed in connection with laboratory and class room work, deposited in the several departments. During the University year the Library is open six days in the week, vacations and legal holidays being excepted. From Monday until Friday the hours are from 7:30 a. m. until 9:30 p. m.; Saturday from 7:30 a. m. until 4 p. m.

#### STATE LIBRARIES.

Students are privileged in being near the two State Libraries. The Ohio State Library numbers more than 86,000 volumes and is a circulating one for all the citizens of Ohio. It is of great value for students, especially in English literature, history, economics and political science. The State Law Library is the largest and most complete law library in the State. It contains complete sets of the English, Scotch, Irish, Canadian, United States and State reports, statutes and digests. The important legal periodicals are on file.

#### CITY LIBRARIES.

The students of the University, as residents of Columbus, have access to the City Library and the Public School Library, under the usual regulations. The City Library numbers 37,000 volumes. The Public School Library numbers about 55,000 volumes.

#### Laboratories

The laboratories of the University are the most extensive in Ohio and are well equipped for graduate and special research. Omitting those which are exclusively for the professional and technical Colleges of the University, the following list of laboratories and their directors gives an indication of the opportunities available for scientific research and investigation:

Astronomical, Professor H. C. Lord,
Bacteriological, Associate Professor Morrey,
Botanical, Professor Kellerman,
Chemical, Professor McPherson,

Professor Osborn

Entomological, Geological:

Historical, Professor Prosser.
Petrographical, Professor Bownocker.
Histological, Professor Bleile.
Metallurgical, Professor N. W. Lord.
Physical, Professor Thomas.
Physiological, Professor Bleile.

Psychological, Assistant Professor Haines.

Zoological, Professor Osborn.

Erief mention of some of these laboratories is made in the subsequent pages of this bulletin. For fuller descriptions of the laboratory buildings and equipments consult the Annual Catalogue of the University.

Special attention should be called to one Laboratory—the Lake Laboratory—maintained by the university at Sandusky, during the summer vacation, where it occupies a commodious building on a commanding site on Cedar Point. The Cedar Point Company, which donated the site for the laboratory, also gives free transportation on its boats to workers at the laboratory, thus bringing within easy reach good board-

ing places and most delightful opportunities for field work and recreation. The laboratory is well supplied with boats, tables, collecting appliances and aquaria, while microscopes, reagents, etc., are supplied from the home laboratory. It offers courses in General Botany, Ecology, Morphology, General Zoology, Comparative Anatomy, Entomology, Ichthyology, Ornithology. There are opportunities for special research in any branch of biology. The professors of the department of Botany and Zoology, with their assistants, constitute the staff of instruction.

The courses are open to students and teachers generally and students of the University may receive credit for courses equivalent to University courses. For graduate students in these lines this laboratory affords exceptional opportunities. For further information write for special circular on the Lake Laboratory.

#### Seminaries

As a large part of the work of graduate students consists of individual research carried on under the personal direction of the professor in charge, seminaries have been organized in several of the departments to ensure the systematic supervision of such work. By this arrangement advanced students within a department are brought together for cooperative research and for comparison and criticism of methods and results. At present the following seminaries are organized, some of them exclusively for graduates and others for graduates and advanced undergraduates:

American History, Professor Knight. Professor McPherson. Chemistry. Professor Clark. Economics, Associate Professor Major. Education. English Literature, Associate Professor Taylor. English Philology, Assistant Professor McKnight. Professor Scott. Ethics, French. Professor Bowen. German. Professor ----Assistant Professor Elden. Latin. Assisant Professor Haines. Philosophy, Professor Knight, Assistant Professor Smith. Political Science.

Professor Denney.

Rhetoric.

#### Societies and Clubs

In addition to flourishing literary societies there are several voluntary organizations of a scientific, technical or special character, composed of instructors and advanced students. Among them are the Biological Club, the Chemical Association, the Political Science Club, the English Club, the Philosophy Club. These organizations hold fortnightly or monthly meetings at which formal papers are read and discussed, reports of experiments and investigations given and the current literature of the special field reviewed.

## Expenses

The incidental fee of eighteen dollars a year is the only fee charged to all students (except those holding scholarships), and is payable one-third at the opening of each term. Such laboratory fees as are charged to students pursuing laboratory courses in science are detailed in the University catalogue. A graduation fee of ten dollars is required of each person receiving one of the higher degrees from the University, and this fee must be paid before the degree is conferred.

The cost of living, which is the chief item of expense, is as reasonable in Columbus as in most college towns. Furnished rooms may be secured at prices ranging from one dollar a week upward, and the cost of table board is from two dollars and twenty-five cents upward. In the matter of expense much is dependent upon the personal taste and habits of the student. There is nothing about the State University requiring a large expenditure of money; economy and careful living are the rule. The University distinctly encourages these things, and will use every means to discourage a lavish expenditure of money as inconsistent with the best interests of the student or of university life. Two hundred and fifty dollars may be regarded as sufficient money to provide for reasonable expenses for a year at the University.

# Fellowships

To encourage graduates of this University, and of other similar and approved institutions in this State, to continue their studies and to undertake advanced work leading to the higher degrees, the University authorities have established fellowships in several departments. These demand about one-half of the time of the fellow for laboratory or other similar assistance—as far as possible along the line of his graduate study. The remainder of his time is given to graduate work. The fellowships pay from \$250 to \$300 for the University year. At present there are three such fellowships in Chemistry and in Rhetoric, two in Botany, and one each in Economics and Zoology, and a few others in the technical and professional colleges.

There is also a fellowship endowed by Mr. Emerson McMillin, of New York, known as the Emerson McMillin Fellowship in Astronomy, and having an annual value of \$300. This differs from the University fellowships in that the holder is not required to render assistance in the department, and is expected to devote his entire time to graduate study. Appointments to all fellowships are made annually in April or May for the following year on recommendation of the head of the department.

#### Aids to Moral and Religious Culture

A weekly convocation is held at 10 o'clock on Wednesdays in the University Chapel. During this hour all other University exercises are suspended; and the entire Faculty and student body are expected to attend this exercise. It consists of a brief devotional service, followed by an address by the President, some member of the Faculty, or an invited guest.

The University branch of the International Young Men's Christian Association has a large membership. The management has rented a house at 1610 Highland Street as headquarters for the Association and employs the full time of a general secretary. Prospective students are invited to write for a handbook of information concerning the University, or for information concerning rooms, boarding or employment, to J. H. Warner, General Secretary, Y. M. C. A., 1610 Highland Street, Columbus.

There is also a University branch of the Young Women's Christian Association, affiliated with the State organization. Headquarters have been established at 163 West Eleventh Avenue, which is also the address of the General Secretary, Miss Mina Ford. The local branch has also established a series of monthly twilight concerts, which are conducted in the University chapel, to which the best musical talent of the city has generously contributed its services.

## University Catalogue

Each of the six colleges of the University publishes in the spring of each year a College Bulletin or Catalogue, which may be had on application. These Bulletins, together with the Bulletin of the Graduate School of the College of Arts, Philosophy and Science, represent the entire work of the University. All persons desiring more detailed information in regard to the College of Arts, Philosophy and Science than they find in the following pages are referred to the Bulletin of the College. The general annual Catalogue of the University will appear in August, 1903, copies of which may be had on application to the Executive Office, University Hall.

# College of Arts, Philosophy and Science

#### **Officers**

REV. WILLIAM OXLEY THOMPSON, D. D
President of the University.
Joseph Villiers Denney, B. A
Dean.
Alfred Dodge Cole, A. M
Secretary of the Faculty.

### **GRADUATE SCHOOL**

#### Administrative Board

PROFESSOR GEORGE WELLS KNIGHT, Ph. D., Chairman, 15 University Hall
PROFESSOR WILLIAM McPherson, Ph. D20 Chemical Hall
Professor Allen Campbell Barrows, D. D31 University Hall
Professor Herbert Osborn, M. Sc
THE DEAN of the College, ex officio

# Departments Organized for Graduate Instruction

Philosophy, Latin Language and Literature, Greek Language and Literature, Metallurgy, Physics, American History and Political Science, Mathematics, Germanic Languages and Literatures, Anatomy and Physiology, Botany, Romance Languages and Literatures, Rhetoric and English Language, English Literature, Chemistry, Zoology and Entomology, Astronomy, Economics and Sociology, Geology, European History, Education, Bacteriology.

# Graduate School

# Organization

In order better to meet the rapidly increasing demands made by graduates of Ohio Colleges upon the University for graduate instruction, the Faculty of the College of Arts, Philosophy and Science has established the Graduate School and systematically organized the scheme of graduate work. The object of the School is to emphasize and utilize in highest degree the facilities which the University affords for advanced students and to secure a more effective and systematic arrangement and supervision of the higher work. Though the Graduate School is organically within the College of Arts, Philosophy and Science, the supervision and administration of all matters connected with the graduate work has been lodged in the Administrative Board of the Graduate School consisting of the Dean and four other members chosen from the Faculty. The Chairman of the Administrative Board is Professor George W. Knight, to whom all communications should be addressed.

#### Admission

Registration as a student in the Graduate School is open to all graduates of the College of Arts, Philosophy and Science of this University, and to graduates of other colleges of this University, or of other universities or colleges who satisfy the Administrative Board that they are qualified to pursue with profit the work here offered in the lines of study which they wish to carry on.

Graduates of institutions of which the undergraduate courses of study are not substantially equivalent to the course prescribed in this College for the bachelor's degree will be required to do an additional amount of undergraduate work, or to prolong their term of residence, before being admitted to full candidacy for a higher degree.

Bachelors of this College or of other institutions who do not wish to become candidates for a higher degree may be admitted as special graduate students.

Application for admission as a graduate student should be addressed to the Chairman of the Administrative Board of the Graduate School. Full details should be forwarded of the candidate's previous course of study, the degree desired, and the special preparation already had in the major and minor subjects to be pursued.

As the first question to be decided is whether the degree already taken by the applicant is substantially the equivalent of the degree given in this College, full information on this point is required. This should include a general statement of the character of the course pursued with special reference to the amount of mathematics, science and the languages, including English. Blank forms of application may be obtained from the Registrar of the University.

The second question touches the qualifications of the applicant to enter upon advanced work in the special departments of study in which he desires to work. In order to determine this, a detailed statement is necessary of the previous course of study in the major and minor subjects which the applicant desires to pursue. Official evidence of the above statements must be submitted before the applicant is admitted to full registration.

No graduate student will be registered as a candidate for a higher degree later than October first of the academic year in which he seeks the degree.

#### Course of Instruction

For Candidates for Higher Degrees. Unlike the curriculum for undergraduates, the work of candidates for higher degrees is not confined to specific courses of instruction regularly offered in the College. Each student chooses a major study and one or two minor studies, which must be approved by the Administrative Board before he enters upon his work. This may consist of attendance upon specified courses or of private research or reading and report thereon. The professors in charge of the studies chosen constitute a special committee, the professor in charge of the major study being the chairman, to arrange the details of the work comprising the major and minor studies, to supervise the work of the student, to examine and pass judgment on the thesis and to conduct the final examination.

Upon the completion of the prescribed course a final examination upon the entire work undertaken for the degree is held under the direction of the special committee, except that at the option of the committee the examination upon the minor or minors may be held whenever such minor or minors are completed.

A thesis upon some subject within the field of the major study is required of all candidates for the doctor's degree and is also required of all candidates for the master's degree unless waived in individual cases by the Administrative Board on the recommendation of the special committee in charge of the candidate's work.

With the approval of the Administrative Board a candidate for a higher degree may elect specific courses, additional to the major and minor studies. For such election any course offered in the College of Arts, Philosophy and Science is open to candidates who satisfy the head of the department that they are qualified to pursue it with profit. The amount of such additional elective, if any, which the student may take must in each case be determined by the Administrative Board, and it is to be

understood that such work, if allowed, will not be credited towards the degree for which the candidate is working.

For Graduate Students not Candidates for a Degree. Graduate students who are not seeking a higher degree are not required to designate major and minor studies, but may select their work with a view to the special purpose for which they are in attendance at the University. Any course of instruction announced in the College of Arts, Philosophy and Science is open for election by graduate students not candidates for a degree who satisfy the head of the department that they are qualified to pursue it with profit. But the list of electives so chosen must in each case be approved by the Administrative Board before the student enters upon his work.

Should such student subsequently desire to become a candidate for a higher degree the Administrative Board will determine how much, if any, of the work previously done as a graduate student can be counted as a part of the major and minor studies requisite for the degree sought.

## Requirements for Higher Degrees

The University confers two higher degrees, Master of Arts and Doctor of Philosophy, upon the completion of approved courses of resident graduate study.

The Master's Degree. The degree of Master of Arts is open to those holding the Bachelor's degree who have been admitted to full candidacy as indicated above (see Admission, second paragraph). A residence of at least one year at this University wholly devoted to the work for the degree is required. With the consent of the Administrative Board the work of candidates for the Master's degree may be distributed over more than one year. The Master's degree is not conferred for study in absentia.

A holder of the Bachelor's degree will be recommended for the degree of Master of Arts upon the completion of the prescribed term of residence, and passing a final examination in the course of study laid out for him, covering a major and one or two minor subjects approved by the Administrative Board, and unless waived by the same body, the submission and acceptance of a thesis, on some subject within the field of the major study. The major study must be in advanced work; the minor study or studies may, with the approval of the Administrative Board, be of a more elementary character.

The subject for the Master's thesis must be chosen and approved by December 1st, and the complete thesis must be submitted not later than June 1st. A typewritten copy of the accepted thesis must be deposited with the University before the candidate will be recommended for a degree.

The Doctor's Degree. The degree of Doctor of Philosophy is open to those holding the Bachelor's degree who have been admitted to full candidacy as indicated above (see Admission, second paragraph), and who also fulfill the terms of this and the next paragraph. At least three years of resident graduate work is required, but on approval of the Administrative Board the first year, or the first two years, may be spent at another university which offers equivalent graduate work.

Save in the cases of persons who come properly accredited from a graduate school of some other university no student will be enrolled as a candidate for the degree of Doctor of Philosophy until he has been in residence as a graduate student at this University for one year. Formal application for enrollment as a candidate for the degree must be made at least one year before the candidate expects to present himself for final examination. No person will be admitted to candidacy for the degree who does not possess at the time of enrollment a reading knowledge of French and German.

Each candidate for the Doctor's degree must pursue a major study and two allied minor studies, one of which may be within the same department as the major. All of them must be advanced, specialized work. The degree is intended to represent not a specified amount of work, covering a specified time, but long study and high attainment in a special field.

Each candidate is required to prepare a thesis within the field of his major study, involving an extended research or investigation and constituting an original contribution to knowledge. The thesis for the Doctor's degree is one of the most essential factors of the candidate's work, since it measures his accuracy and power of independent investigation. The preparation of an acceptable thesis will usually require the greater part of an academic year.

After the acceptance of the thesis the candidate will be examined by his special committee upon the entire work undertaken for the degree, except that at the option of the committee the examination on the minors may be held whenever such minors are completed.

Each candidate is required to have his accepted thesis printed and to deposit with the University library fifty copies to be used for exchange purposes.

The subject of the thesis for the Doctor's degree must be chosen, and approved by the special committee, by November 1st of the college year in which the applicant expects to take the degree. The completed thesis must be submitted not later than May 1st. The final examination will be held not later than June 1st.

# Courses of Instruction

The following list presents a brief description of the advanced courses offered in the Graduate School suitable to form constituent parts of "major" and "minor" studies. Discrimination has not been attempted in all cases between purely graduates courses and those which are also open to advanced undergraduates in the College of Arts, Philosophy and Science. Many of the courses mentioned are of the latter class, but are suited to the needs of many holders of a bachelor's degree. So far as possible the announcements indicate in fairly specific terms the preliminary training necessary for entrance upon each of the courses or subjects.

It should be remembered also that in many cases the work of graduate students consists of individual reading, experiment, investigation and research in some special line or subject not covered by any announced "course" and not involving or calling for attendance upon lecture or class. Such graduate work is obviously incapable of announcement and description as a "course." For further information as to any course announced in the following pages, and regarding the special work mentioned above, consult the head of the department concerned or send for the department circular.

In the following announcements the figure in parenthesis immediately following the subject of the course, is the number of the course as it appears in the College Bulletin and the University Catalogue, where a fuller description is in some instances given.

# American History

(See History)

# Anatomy and Physiology

(Biological Hall, Rooms 12 and 20.)

The facilities provided for study in anatomy, histology and physiology are good. The laboratory is supplied with skeletons, papier-mache manikin, and many models. The apparatus of the department for work in physiology is of approved construction, and is adapted to the thorough performance of the fundamental physiological experiments. For work

in histology the equipment includes thirty-four individual tables for student experiments, each table being supplied with microscope, microscopical accessories, and re-agents; and for advanced work, the needed apparatus for instruction in the various methods of hardening, staining, imbedding, section-cutting and injection. The laboratory also has excellent microtomes, imbedding baths and other essentials of a histological out-fit. The equipment of the laboratory makes it possible to offer a large range of work for the choice of students in advanced courses.

The following courses for advanced students presuppose at least one year's collegiate work, including lectures and laboratory work in Human Anatomy and Physiology (the equivalent of course 1 in Physiology as described in the Arts College Bulletin) and a course in Chemistry, including laboratory work. The work of the graduate student in the following courses will be laid out to meet to some extent individual cases when there is a specific end in view.

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

**Physiological Laboratory** (9). Three times a week, three terms. Laboratory hours to be arranged. Professor Bleile.

**Physiological Laboratory** (11). Five times a week, three terms. Hours to be arranged. Professor Bleile.

#### Astronomy

(The Emerson McMillin Observatory)

The Emerson McMillin Observatory is the gift of Mr. Emerson McMillin of New York. The equipment consists of a  $12\frac{1}{2}$ -inch equatorial, mounted by Warner and Swasey, objective by Brashear, a universal star spectroscope by Brashear, position micrometer by Warner and Swasey, 3-inch combined transit and zenith telescope by Saegmuller, 4-inch portable equatorial by Alvan Clark,  $2\frac{1}{2}$ -inch zenith telescope by Troughton and Simms, 12-inch theodolite and two smaller ones by Troughton and Simms, comparator by Zeiss, 5-foot concave grating spectroscope by Brashear, clock by Riefler, chronograph, chronometer, sextants, meteorological instruments, etc.

The spectroscopic laboratory is provided with a 2 H. P. gas engine and dynamo, and a large storage battery.

As a prerequisite for the advanced work in Astronomy the student, in addition to a collegiate course in general Astronomy must have had Mathematics through the calculus. Students wishing graduate work in Astrophysics, as noted below, need not have had the general Astronomy provided they have had a good collegiate course in the theory of Physics and at least one full year of Laboratory Physics (the equivalent of Physics 2 and 12 as described in the Bulletin of the Arts College p. 83) and Mathematics through the calculus.

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

**Astronomy, Geodesy and Least Squares** (2). Lectures on practical Astronomy, supplemented by practice with the instruments of the

Emerson McMillin Observatory. Text-book, Doolittle. Three times a week, three terms. Professor H. C. Lord.

Advanced Astronomy (4.) Lectures, Reading and Laboratory work from 3 to 5 hours a week, three terms. Courses will be offered in Theoretical Astronomy or Astrophysics, as students may elect. Hours to be arranged. Professor H. C. Lord.

# Bacteriology

The Department of Bacteriology will occupy a portion of the new Veterinary Laboratory Building. There will be a laboratory on the second floor accommodating about thirty students, another in the basement with places for fifteen men, a room for experimental animals in the attic, one for inoculated animals in the basement, and two incubator rooms. These rooms will be provided with facilities for advanced and original work.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Bacteriology (5). One lecture, two laboratory periods, of three hours each, weekly through the year. First term general, second and third terms special along one of the following lines: a) Pathogenic Bacteria, b) Agricultural, c) Dairy, d) Sanitary Bacteriology and Water Examination, e) Bacterial Chemistry, the products of bacterial action, enzymes, ptomaines, toxines, etc. Associate Professor Morrey.

**Advanced Bacteriology** (6). More advanced work on lines of previous Course. Five periods a week through the year. Associate Professor Morrey.

#### Botany

# (Botanical Hall.)

The General Botanical Laboratory is on the second floor of Botanical Hall. It is equipped with compound microscopes of the Bausch and Lomb, the Leitz and other patterns. There are more than fifty dissecting microscopes, also charts, and several minor pieces of apparatus for experiments in vegetable physiology. Three smaller rooms are provided as laboratories for special work, as well as a dark room for photography. Other facilities for the courses in botany are: A general herbarium, including flowering plants, ferns, mosses, fungi and algae; a state herbarium, a collection of fruits and seeds, valuable timbers, woods, grasses and various economic products of the vegetable kingdom; ornamental grounds and woodland, planted with a large variety of evergreen and deciduous trees and shrubs; and a greenhouse and propagating house with a fair collection of native and exotic plants.

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Prerequisites: Work in advanced Botany for a full year daily, in

- addition of the elementary Botany of the preparatory high school.
- Laboratory Work in Histology and Physiology (25). Three to five laboratory periods weekly. Three terms. Laboratory open daily.

  Assistant Professor Schaffner.
- Advanced Laboratory Work in Histology and Microtechnique (26).

  Three terms. Laboratory open daily. Assistant Professor Schaffner.
- Laboratory and Field Work in Systematic Botany (27). Three to five hours. Three terms. Laboratory open daily. Professor Kellerman.
- Research Work in Systemate Botany (28). Three terms. Laboratory open daily. Professor Kellerman.

#### II. FOR GRADUATES.

Prerequisite: In addition to a course in Elementary Botany the graduate student must have had daily work for a full year in general Morphology and Physiology, including laboratory work (and for Courses 30 and 31 this must include Ecology and Systematic Botany) and also special work, at least half a year, preparatory to the work to be undertaken.

- Research Work in Morphology and Physiology (29). Three terms.

  Laboratory open daily. Assistant Professor Schaffner.
- Monographic Work (30). Three terms. Laboratory open daily. Professor Kellerman.
- **Research Work in Ecology** (31). Three terms. Laboratory open daily. Professor Kellerman and Assistant Professor Schaffner.

## Chemistry

# (Chemical Hall)

The laboratories of the department are located in Chemical Hall and accommodate about six hundred students. Each laboratory is equipped with all the necessary conveniences. The department is liberally supplied with the best apparatus and materials for both lecture room and laboratory work.

As a requisite for admission to the following courses, students must have thorough preparation in General Inorganic Chemistry, Qualitative and Quantitative Analysis.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Organic Chemistry (8, 9). Laboratory and recitations. The laboratory work includes the preparation of typical organic compounds. Two recitations and six hours' laboratory work weekly. Three terms. The laboratory is open afternoons. Professor Mc-Pherson.

## Physical Chemistry (30),

- (a) Lectures and recitations. This course aims to give the student such a general knowledge of physical chemistry as may be obtained by a thorough study of some one of the standard texts on the subject. The course may be taken independently of course 30(b). Three times a week, second and third terms. Associate Professor Henderson.
- (b) Laboratory. A course in experimental work designed to illustrate the leading principles of the science. The course must be accompanied or preceded by course 30(a). Second and third terms. Afternoons. Associate Professor Henderson.
- Rare Elements (35). Lectures and recitations. This course is designed to serve two purposes. It extends the student's knowledge of chemical facts and principles by a study of those elements usually passed by with brief comment in general courses. It is of considerable practical value to students of metallurgy since many of the rarer metals are now frequently met with in the metallurgical industries, and the analyst must be familiar with their properties. Three times a week, first term. Associate Professor Henderson.
- Analytical Chemistry (33). Laboratory, lectures and recitations. Lectures and recitations include a general review of qualitative and quantitative methods and the theory of analytical operations and reactions. Four or five hours weekly, three terms. Hours arranged with the instructor. Associate Professor Foulk.
- **Advanced Chemistry**(27). Laboratory and reference work. Hours arranged with the instructor.
  - (a) Organic. Arranged for students who have completed courses 8 and 9. The work includes the further preparation of typical organic compounds, their purification and analysis. Professor McPherson.
  - (b) Inorganic. This course is especially designed for students who are desirous of studying the methods of preparation and the properties of a series of inorganic substances; or for those who desire to continue the study of certain chapters of inorganic chemistry. Associate Professor Henderson.
  - (c). Analytical. Special topics such as the critical study of methods, etc. Associate Professor Foulk.

#### II. FOR GRADUATES.

- **Chemical Seminary** (26). Advanced students meet for the discussion of special topics and current literature. Once a week. Three terms. Professor McPherson and the instructors in the department.
- Organic Chemistry (28). Lectures on special topics. This course must be preceded by courses 8 and 9 and preferrably by course 27(a). Twice a week, third term. Hours arranged with the instructor. Professor McPherson.

Research Work, Library and Laboratory Work (29). Five to ten hours. First, second and third terms. Hours to be arranged.

Professor McPherson, Associate Professor Henderson, Associate Professor Foulk.

# Economics and Sociology

(University Hall, Rooms 17, 18, 20, 29)

The University is possessed of a unique equipment for study purposes in these lines. This equipment comprises a large collection of railroad, municipal and school bonds; of stocks of all kinds; of letters of credit, drafts, foreign bills of exchange, bills of lading, checks, enclosures, statements, insurance policies, trust certificates, notes, mortgages and other necessary forms of business papers; also collections of coins illustrative of the various periods in our monetary history, foreign coins, and scrip; also sets of maps and charts and a Kiepert-Commercial Globe 80 cent. in diameter. Ample facilities for statistical work are provided and a seminary room set apart for laboratory material, documents, etc., is always open to advanced students. The University possesses a special library in economics consisting of several hundred volumes and pamphlets. Over thirty financial, commercial and trade journals are received and filed regularly.

Students expecting to do graduate work in this department should be well equipped in history, economics, and philosophy and should by all means possesses a reading knowledge of French or German or both. The location of the University in Columbus will be found to be a great advantage for research in economic lines.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Commerce (10). The scope of this course is seen in the following arrangement of the work. First term: History and Geography of Commerce. Second term.: Theory and Technique of Commerce. Third term: Art of Commerce. Lectures, practical investigations and reports. Three times a week through the year. Professor Clark.
- **Sociology and Statistics** (13). Lectures and laboratory work. Text, Mayo Smith's Sociology and Statistics. Once a week through the year. Assistant Professor Hagerty.
- **Economic Literature and Legislation** (14). A round-table study of current industrial affairs; reviews of magazine articles, books, reports on bills, etc. Once a week through the year. Professor Clark.
- **Seminary in Economics** (15). Through the year, two hours a week at one meeting. The work for 1903-1904, is outlined as follows: At each alternate meeting a practical problem will be presented and discussed. The other meetings will take up the study of Classical Economists: English, German and American. Professor Clark.

- **Thesis Work** (16). Twice a week, three terms. In this work, as far as possible, only original sources are used, and investigations made from real life. Meetings are arranged with the instructor throughout the year. Professor Clark.
- Business Laws and Forms (18). Text-book, lectures and laboratory work. Twice a week, first and second terms. (Omitted in 1903-1904.)
- Corporation Problems (19). This course aims at a complete analysis of the subject in both its theoretical and practical aspects. Trusts, Mergers and capitalistic forms of organization in general come under discussion. Twice a week, third term. (Omitted in 1903-1904.)
- **Economic Thought** (20). Text-book and lectures. Twice a week, first term. Professor Clark.
- Growth and Development of Social Thought and Institutions (21).

  A study of the contributions to social theory of Plato, Aristotle, Aquinas, Comte, Spencer, Ward, Tarde, Giddings, etc. The third term will be devoted to a study of English Social Pioneers. Twice a week through the year. Lectures and reports. Assistant Professor Hagerty.
- **Seminary in Sociology** (17f). Open to advanced undergraduates on permission of the instructor. Two hours a week throughout the year. Professor Clark and Assistant Professor Hagerty.

#### II. FOR GRADUATES.

- Advanced Economics (17). From one to ten hours a week, three terms.

  Hours arranged with students individually. The aim of these courses is to offer the student an opportunity to specialize to any degree he may desire along the various lines within the field of the department. Elections will naturally fall under the following heads:
  - (a) Theoretical Problems.
     (b) Historical Problems.
     (c) Practical Problems.
     (d) Finance.
     (e) Commerce.
     (f) Sociology (Theoretical or Practical).
     (g) Statistics.
     (h) Teacher's Course and Training for Fellowship.
  - When several students elect the same line of work, they may constitute themselves a group and a seminary will be organized as a nucleus for such work. Professor Clark and Assistant Professor Hagerty.

#### Education

(University Hall, Rooms 51 and 54)

The minimum requirement for admission to graduate work in the department of Education is Philosophy 18, 19 or equivalent, and one course in the department of Education. (See Bulletin of the College of Arts, Philosophy and Science, 1903-1904, p. 54.)

The following courses offered by other departments of the University are especially valuable for graduate students of education: Philosophy, 20, 21, 29, 42; Anatomy and Physiology, 1; Zoology, 21; Sociology, 11; European History, 1, 2, 3. (See Bulletin of the College of Arts, Philosophy and Science.)

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- **Child Study** (4). The first part of this course is designed to present the general facts and laws of physical growth and development with special reference to school hygiene. The second part aims to describe the characteristic features of child mind, to study the **principles and empirical data** of mental development with special reference to educational theory and practice. Twice a week throughout the year. Associate Professor Major.
- Science of Education (5). This course aims to develop a consistent theory of education. It is especially intended for students who expect to deal with the larger problems of education which confront the superintendent or principal. It should help all specialists to see the place of their particular grade or subject in the developmental process of the individual pupil. Lectures, readings and reports. Three hours a week. Three terms. Assistant Professor Haines
- Modern Educational Systems (6). A comparative study of education in Germany, England and France. The course will deal briefly with the history of these systems, but chiefly their present organization. The interest centers in the secondary education of those countries. Lectures, reading and reports. Twice a week. Associate Professor Major.
- Secondary Education (7). The history, curriculum, organization and administration of secondary education in the United States. The course will be concerned mainly with the problem of the public high school, and is intended primarily for those who are preparing to become high school teachers or principals. Twice a week, three terms. Associate Professor Major.
- Educational Classics (8). The aim of this course will be to make a critical and comparative study of such classics as Plato's Republic, Rousseau's Emile, Pestalozzi's Leonard and Gertrude, Froebel's Education of Man, Herbart's Science of Education, Spencer's Education. Lectures, reading and reports. Twice a week, three terms. Associate Professor Major.

Seminar(9). Designed for students who wish to investigate special problems in education. Members of the course will work independently, but will meet once a week for general discussion of some subject under investigation. Open only to students who have worked extensively in either philosophy or education. Three terms, two hours a week. Associate Professor Major.

# English Literature

(University Hall, Room 31)

For graduate work in this department the prerequisites are the same as for the department of Rhetoric and English Language, and an acquaint-ance with the outlines of the history of England. The work in English should include as much of the history of the development of English Literature as is secured in twelve term-hours of "period" courses (2 to 6 inclusive and 18) in this College, exclusive of preparatory work.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Masterpleces: A Study of Literary Types (17). Three times a week through the year. The study is of the origin and development of literary types, the best examples in English being chosen for basis. Associate Professor Taylor.
- **Current Literature** (19). Twice a week, through the year. The study is of poetry the first term, and of the novel the second and third terms. Associate Professor Taylor.

### II. FOR GRADUATES.

- Literary Problems (16). Twice a week, through the year. A series of studies of the fundamental problems of criticism. Lectures followed by illustrative readings selected from the entire range of our literature: written reports and discussions. Professor Barrows.
- Special Investigations (23). Twice a week, through the year. This course is designed for those who wish to make an extended investigation of a literary topic. The work will be either (a) a continuation of course 16 open to those who have taken that course; or (b) an enlargement of course 17 open to those who are enrolled in course 17. (a) Professor Barrows. (b) Associate Professor Taylor.
- **Translations** (20). Once a week, through the year. A study of the indebtedness of English to other literatures, and of various problems of general literature. Professor Barrows.
- Masterpieces: A Course for Teachers (21). Three terms. Lectures in outline, to be developed by the student, on the literary aspects of each period, biographical studies of the authors of the masterpieces studied; extended criticism of masterpieces, selected in consideration of their importance in the development of literature. An advanced review of the subject, designed for those who intend to become teachers. Professor Barrows.

- The Development of Literary Types (22). Three times a week, through the year. A course in comparative criticism, the types in English literature being referred to their models in classic or romance literature. It calls for a reading knowledge of French or German, and some acquaintance with Greek and Roman literature. In 1903-4 the studies will be as follows: First term, the pastoral; second term, the romance; third term, the novel. Seminary method is followed. Associate Professor Taylor.
- Shakespeare: An Attempt at Complete Literary Criticism (24).

  Two credit hours through the year. Hours to be arranged. Associate Professor Taylor.

## Entomology

(See Zoology and Entomology)

## European History

(See History)

#### French

(See Romance Languages and Literatures)

## Geology

(Orton Hall, Rooms 1, 4, 5, 7, and 13)

The University is able to present unusual advantages for the study of Geology. By an act of the Legislature it has been put in possession of all the collections made by the Geological Survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio. The department offers exceptionally good opportunities for work in the stratigraphical and petrographical laboratories.

The catalogue of the museum contains more than 11,000 entries; but as only one number is as a rule given to a fossil or a mineral species, the individual specimens make an aggregate list of many thousands in addition to the catalogue list.

The student before entering upon graduate work in geology should have had the general courses in physiography and inorganic and historical geology, or their equivalent. If he intends to specialize in Historical Geology he should have had in addition to the above, general courses in zoology and botany; if in Inorganic Geology, then general courses in chemistry, mineralogy and crystallography.

- Economic Geology (6). Lectures and assigned reading. The nature of ores, their classification and origin. The metals of the United States, their distribution, abundance, modes of occurrence and origin. The non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. In the discussion of the non-metals emphasis will be laid on the products of Ohio. Three times a week. Professor Bownocker.
- Field Geology (13). Field and laboratory study of the geological formations readily accessible from Columbus. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the collection and identification of specimens, the measurement of geological sections and the preparation of a report describing the region studied. Third term. Field trips Saturdays. Professor Prosser.
- Paleontology (14). Careful training in systematic classification which may be used in the philosophical study of the development of plant and animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. Laboratory, museum and field work. Three terms. Professor Prosser.
- Areal Geology (15). Instruction in the methods of preparing geological maps and reports. The student compiles from a geological report a map with sections showing geologic structure, and later traces the outcrops and prepares a geological map of some region. First and third terms. Field work Saturdays. Professor Prosser.
- **Geographic Geology** (18). The origin, development and destruction of topographic forms. Lectures, map work, field excursions. Three times a week, third term. Professor Bownocker.
- Petrography (19). Laboratory and lectures. Optical crystallography, with practical determination of rock-forming minerals, macroscopically and microscopically. Study of the igneous rocks in the hand specimen and thin section. Three terms. Professor Bownocker.

#### II. FOR GRADUATES.

- Advanced Historical Geology (16). Work in paleontology and stratigraphical geology for students who have had courses 13 and 14.

  Three terms, Field work and laboratory, Field work to be arranged with individual students. Professor Prosser.
- Research Work (20). Field, laboratory and library study in Inorganic or Historical Geology. Outline of work and time to be arranged with individual students. Three terms. Preceding courses in Inorganic or Historical Geology are prerequisite. Professor Bownocker or Professor Prosser.

## Germanic Languages and Literatures

(University Hall, Rooms 30 and 32)

The department of Germanic Languages and Literatures is in charge of the instruction in German and some of the related languages and literatures. Courses in general philology are also offered.

The University library offers good facilities for the work in this department. In addition the department is supplied with a large number of illustrated books which are used to give the student a vivid picture of German life, customs, etc.

The preparation required for the advanced courses is as follows:

Three years of German for courses 11, 14, 15, 16, 17, 18, 26, 27; three years of German and of Latin for courses 19, 20. Courses 23, 24, 25 must have been preceded by 20. A limited knowledge of foreign languages is desirable for 21.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Faust I and II (11). Twice a week, three terms. The consent of the professor in charge will have to be secured. Students are expected to take both parts. Professor —————
- **Gothic** (14). Twice a week, first term. This course is purely linguistic and aims to lay a good foundation for subsequent work in language. The relation between Gothic and later dialects is emphasized. Associate Professor Mesloh.
- Old High German (15). Three times a week, second term. A natural sequence to course 14. The attention of the student is not only directed to the archaic forms and syntax, but also to the best literary monuments. Associate Professor Mesloh.
- Middle High German (16). Three times a week, third term. The poems of the Minnesingers, especially those of Walter von der Vogelweide, and one of the mediaeval epics will be studied, principally from a literary standpoint. Professor ————
- Old Norse (17). Twice a week, first term. This course is intended as an introduction to the literature as well as the language. Some prose saga will be read. (Not given in 1903-1904.)
- History of the German Language (18). Twice a week, second term.

  This course aims to give a sound knowledge of the historical development of the German language. (Not given in 1903-1904.)
- Comparative Grammar (19). Twice a week, third term. Meringer's Indogermanische Sprachwissenschaft. Henri's Comparative Grammar of English and German. After a general survey of the whole field the relation between English and German is carefully studied. (Not given in 1903-1904.)
- Sanskrit (20). Twice a week, three terms. Lectures introductory to the study of Indo-Germanic philology. Associate Professor Mesloh.

Phonetics (21). Once a week, first term. A series of lectures discusses the nature of the various sounds of language, their production and inter-relation. A knowledge of German is not essential for this course. Associate Professor Mesloh.

### II. FOR GRADUATES.

- Introduction to the Veda (23). Three times a week, first term. Lanman's Reader. Hillebrandt's Chrestomathy. Associate Professor Mesloh.
- Elements of Pali (24). Three times a week, second term. Frankfurter's Pali Handbook. Reading of selections from the Jatakas and the Dhammapadam. (This course must be preceded by Sanskrit (20). Associate Professor Mesloh.
- Old Persian (25). Three times a week, third term. Jackson's Avesta Grammar and Reader. Spiegel's Altpersische Keilinschriften. (This course must be preceded by Sanskrit (20). Associate Professor Mesloh.
- Seminary A: Literary Criticism (26). Two hours a week at one meeting. Hours to be arranged. Professor ———
- **German Philosophy** (27). Two times a week, three terms. Selections from the chief German philosophers will be read in the original. Open only to advanced students in philosophy. Professor———
- Seminary B (29). Two hours a week. The subject for 1904-1905 will be Gothic. (Not offered in 1903-1904).

#### Greek Language and Literature

(University Hall, Rooms 37, 29 and 28)

All courses except those in Ancient Art (22 and 23) and Private Life of the Greeks (24) presuppose at least four years' study of the language.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- **Thucydides** (13). Book I or Book VII. First term. Three times a week. Associate Professor Hodgman.
- **Demosthenes: Olynthiacs and Philippics** (14). Second term, three times a week. Associate Professor Hodgman.
- Greek Lyric Poets, or Theocritus (15). Third term. Three times a week. Associate Professor Hodgman.
- Attic Drama (16). Lectures and discussions. First term. Twice a week. (Not offered in 1903-1904.)
- Euripides (17). Two plays. Second term. Twice a week. (Not offered in 1903-1904.)
- Aeschylus; The Agamemuon (18). Third term. Twice a week. (Not offered in 1903-1904.)

- **Epic Poetry** (19). Lectures, with reading of Hesiod's Works and Days. First term. Three times a week. Professor Smith.
- **Greek Comedy** (20). Lectures with reading of the Clouds of Aristophanes. Second term. Three times a week. Professor Smith.
- Post-classical Greek (21). Lucian's Timon, and Dion Chrysostom's Hunters of Euboea. Third term. Three times a week. Professor Smith.
- **Ancient Art** (22). Lectures on Architecture. First term, Twice a week. Professor Smith.
- Ancient Art (23). Lectures on Sculpture. Second term. Twice a week. Professor Smith.
- **Private Life of the Greeks** (24). Lectures. Third term, twice a week. Professor Smith.
- **Greek Philosophy** (25). Lectures; with readings of Xenophon's Memorabilia. First term. Twice a week. Professor Smith.
- **Plato; Gorgias or Protagoras** (26). Second term. Twice a week. Professor Smith.
- Studies in New Testament Greek (27). Twice a week, third term. Professor Smith.
- **Historical Grammar** (28). Lectures on the principles that govern the development of the language. Once a week. Through three terms. Associate Professor Hodgman.

## History

## I. American History

(University Hall, Rooms 15, 27, 18 and 48)

The library resources available for study and research in this field are exceptionally good. In addition to general and special secondary works, the University library contains an almost complete set of United States government publications from the foundation of the government, as well as large collections of State documents, and many colonial documents and archives. The State Historical Society library, now housed at the University, is especially strong in colonial material, and in the publications of State historical societies. The State Library contains a vast amount of material on national, state and local history, and numerous files of old newspapers. The combined resources of these libraries, added to the stores of official Ohio documents and manuscripts in the State House, afford a rare equipment for thorough study in American history and institutions.

The courses named below presuppose a good foundation course of at least a year of collegiate character in the political history of the country from the early colonial period; also a good collegiate course in European history and in English political history. At least a fair knowledge of American political institutions is expected.

- The Formation of the United States, 1600-1820 (2). An advanced course covering the political and institutional development of the colonies and the establishment of a federal union. First term, the colonies 1600-1774; second term, revolution and constitution-making, 1774-1789; third term, the development of democratic national and state governments, 1789-1820. Lectures, reading and reports. Three times a week throughout the year. Assistant Professor Smith.
- The Slavery Struggle and Its Results, 1800-1885 (4). An advanced course comprising a study of the development and downfall of slavery in the United States, and its relation to and influence upon government, legislation and political organization. First term, development and status until the Compromises of 1850; second term, secession and civil war, 1850-1865; third term, reconstruction and its effects, 1865-1885. Lectures, readings and special reports. Three times a week throughout the year. (Given biennially. Not offered in 1903-1904.)
- American Diplomacy, Foreign Relations and Expansion (6). An advanced course comprising an historical study of the foreign relations, problems, and policy of the United States, including the acquisitions of territory and their effects on our institutions and government. Lectures, readings and special reports. Three times a week throughout the year. Professor Knight.
- History of Political Parties, 1774-1900 (7). A detailed study of the origin, development and structure of political parties in the United States with particular attention to their social composition, geographical distribution, organization and political methods. Lectures, parallel reading, quizzes and reports. Three times a week throughout the year. (Given biennially. Not offered in 1903-1904.)
- Science (10). Two hours (at one meeting), three terms. Professor Knight and Assistant Professor Smith.
  - Open on permission of the head of the department to those who have had two full collegiate courses in American history and at least one collegiate course in political science.
- The Teaching of American History (11). A course in methods of teaching American history, especially in the secondary schools, designed for advanced students preparing themselves as teachers. Once a week, second and third terms. Professor Knight.

#### II. FOR GRADUATES.

Graduate Seminary in American History and Institutions (12). Some limited field will be made the subject of co-operative study each year by the seminary. So far as possible the investigation will be

in the sources. The subject for 1902-1903 was the Revolutionary Period, and that for 1903-1904 will probably be a continuation of the same, with special reference to the diplomatic history from 1776 to 1800. Two hours a week at one meeting, three terms. Professor Knight.

Individual Investigation (13). Each year special courses of varying scope are mapped out to meet the needs of individual graduate students. For 1903-1904, these lines of investigation will lie principally in the field of diplomatic history. Under the personal direction of the instructor each student carries on his reading and investigation independently, reporting at stated intervals to the instructor. Professor Knight.

### II. European History

(University Hall, Rooms 7 and 36)

The following courses are intended to acquaint those qualified to enter them with an intimate knowledge of the special period or subject concerned, to give the student a comprehensive acquaintance with the best authorities, and practice in the written and oral exposition of assigned topics. Courses 1, 2, 3 or equivalent, (that is to say, collegiate courses in Mediæval and Modern European history—see Bulletin of the College of Arts, Philosophy and Science for 1903-1904, p. 60) must precede them, and course 4 should be preceded by course 14. A reading knowledge of French and German will be most helpful.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Period of the Protestant Reformation (7). This is an advanced course, and deals with reformational movements from the time of the death of Dante (1321), to the Council of Trent (1562). Lectures, collateral reading and investigations. Three times a week, first term. Professor Siebert. (Given biennially. Omitted in 1904-1905.)
- The French Revolutionary and Napoleonic Periods, 1789-1815 (8).

  An intensive study of the cause and effects of the French Revolution, and of Napoleon's struggle with Europe. Lectures, collateral reading and special reports. Three times a week, second term. Professor Siebert. (Given biennially. Omitted in 1904-1905.)
- History of Europe in the Nineteenth Century (9). Lectures, assigned readings and topical reports. Three times a week, third term. Professor Siebert. (Given biennially. Omitted in 1904-1905.)
- **History of European Colonies** (10). A study of the colonial enterprises of Portugal, Spain, England, the Netherlands, France and Germany, beginning with the age of geographical discoveries and tracing the evolution of colonies to the present time. Lectures,

- The Eastern Question (11). An advanced course treating of the relationship tions of European powers with Turkey and Russia by mean lectures, topical reports and required readings. Course 9 s special preparation for this course. Three times a week, term. Professor Siebert.
- Constitutional History of France (12). From the ninth to the middle of the eighteenth century. Origin and development of the feudal system in France, growth of the French monarchy, French institutions before the Revolution. Lectures, required reading, reports. Students must be able to read French. Twice a week, three terms. Mr. McNeal. (Given biennially. Omitted in 1904-1905.)
- History of Northeastern Europe (15). This course will deal with Denmark, Sweden, Poland and Russia from the fifteenth century. Lectures and reports. Twice a week, first and second terms. (Given biennially. Omitted in 1903-1904.)
- Europe and the Asiatic Question (16). Origin and development of the interests of the various European states in the Far-East. Lectures and reports. Twice a week, third term. (Given biennially. Omitted in 1903-1904.)
- History of Mediaeval Civilization (18). A study of institutions and customs in Western Europe during the Middle Ages; primitive Germanic conditions, social and economic features of the Frankish Kingdom and Empire, monasticism, origin of feudalism, etc. Lectures, readings, reports. Three times a week, three terms. Mr. McNeal. (Given biennially. Omitted in 1904-1905.)
- Historical Method and Documentary Sources of the Middle Ages (20) An outline of the principles of historical research and criticism; the bibliography of history; a study of mediæval sources, German tribal laws, capitularies, charters, formulæ, etc. Two hour session, once a week, three terms. Mr. McNeal.
- Investigations of Special Topics in Modern European History (21). Open to those students who are able to satisfy the instructor as to their fitness to pursue the course. Professor Siebert.

## Latin Language and Literature

(University Hall, Rooms 28, 29, 37)

Before entering upon graduate work in this department the student should have had, in addition to the usual preparatory course of four years, three years of collegiate study devoted to Cicero, Livy, Horace, Tacitus, Pliny, Latin Comedy, and Latin writing.

e plan of study for the second degree (A. M.), with Latin as the major subject, should not include more than one of the courses 7-17a.

The ability to use French or German works of reference, and a good wledge of ancient history will be found especially useful. Courses 22, 1 24 in Greek are recommended.

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

## Re. an Life in the First Century of the Empire (7, 8, 9).

- (7) **Tactius:** Historiæ or Annales. Three times a week. First term.
- (8) Juvenal: Satires. Three times a week. Second term.
- (9) Martial: Selected Epigrams. Three times a week. Third term.
  - (The foregoing are not offered in 1903-1904).

## Roman Comedy (10).

(10) **Plautus:** Menaechmi and Rudens. Three times a week. First term. (Not offered in 1903-1904).

### Roman Ethics and Philosophy (11-16).

- (11) **Cicero:** De Finibus or De Officiis. Three times a week. Second term.
- (12) **Seneca:** Medea, De Vita Beata, De Providentia, De Tranquillitate Animi. Three times a week. Third term.
- (13) **Cicero:** De Natura Deorum. Three times a week. First term. Associate Professor Elden.
- (14) Lucretius: De Rerum Natura. Three times a week. Second term. Associate Professor Elden.
- (15) **Horace:** Satires. Three times a week. Third term. Associate Professor Elden.
- (16) **Horace:** Epistles. Three times a week. First term. (Courses 11, 12, 16 are not offered in 1903-1904).

## Biography and Descriptive Poetry (17,17a).

- (17) Suetonius: Divus Julius and Divus Augustus, or Tacitus,
  Annals. Three times a week. Second term.
- (17a) Late Latin: Three times a week. Third term. (Courses 17, 17a are not offered in 1903-1904).
- **Teachers' Course** (18). Twice a week. First term: Cæsar; lectures, private reading, practical exercises in syntax, assigned topics in military antiquities. Second term: Cicero; lectures on Roman oratory and style, rapid reading of selected orations, assigned topics on Roman life and political antiquities. Third term: Vergil; lectures, studies in versification with especial reference to the diction and hexameter of Vergil, interpretation of selected portions of the text. Associate Professor Elden.
- Antiquities (20). Twice a week. Three terms. Roman private life will be studied during the first term. The second and third terms will

- be devoted to political and legal antiquities, including finance and provincial administration. (Not offered in 1903-1904).
- Latin Literature (21). Twice a week. First and second terms. (Not offered in 1903-1904).
- Latin Philology (22). Twice a week. Third t.rm. (Not offered in 1903-1904.)
- Historical Latin Grammar (23). Sounds and Inflections. This course treats in lectures of the growth of Latin sounds and inflections. There will be collateral reading of inscriptions and from Quintilian. Twice a week, three terms. Associate Professor Hodgman.
- **Advanced Latin Writing** (24). Twice a week. Three terms, (Not offered in 1903-1904.)
- **Pro-Seminary** (25). This course offers an introduction to the principles of textual criticism and methods of independent research. The work of 1903-4 will consist of the textual and exegetical study of a portion of the Jugurtha of Sallust, combined with the more rapid reading of other portions. The ability to use German text-books will be required of students in this course after the year 1903-4. Three hours a week. Professor Derby.
- **Ovid:** Fasti (27). A large amount will be read of Ovid's poetical calendar, with its account of the social and religious observances connected with the Roman holidays. Once a week. Three terms. Associate Professor Hodgman.
- Historical Latin Grammar (28). Syntax, lectures on problems connected with the origin and development of certain constructions in Latin Syntax; a treatment along historical lines of the syntactic uses of the cases, moods and tenses. Once a week. Three terms. Associate Professor Elden.

#### Mathematics

(University Hall, Rooms 39, 41, 43 and 45)

Prerequisites for the Courses in group I below: One year in college algebra and trigonometry and for the mechanics calculus in addition. For the work in group II, the student must have completed the average college course in algebra, trigonometry, analytical geometry and calculus.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Analytical Geometry (33). Five times a week, third term. Professor Bohannan, Assistant Professor Kuhn.
- Calculus (41, 42, 43). Five times a week through the year. Professor Bohannan, Assistant Professor Kuhn.
- **Mechanics** (51, 52, 53) Five times a week through the year. Associate Professor Boyd.

**Higher Mathematics** (25). From one to ten hours a week may be selected from the following courses:

(a) Determinants, (b) Modern Geometry; (c) Modern Higher Algebra; (d) Advanced Analytical Geometry (Plane); (e) Advanced Calculàs; (f) Space Analytics; (g) Differential Equations; (h) Theory of Equations; (i) Higher Plane Curves; (j) Groups; (k) General Function Theory; (l) Elliptic Functions; (m) Potential Function; (n) Spherical Harmonics; (o) Mathematical Electricity; (p) Mathematical Optics; (q) General Mathematical Physics; (r) Higher Geodesy; (s) Infinite Series and Products. Hours to be arranged. Professor Bohannan, Assistant Professors Swartzel, Kuhn, Coddington.

## Metallurgy and Mineralogy

(Chemical Hall, Office Room 5)

Graduate students for the following course must have as a prerequisite a good general collegiate course in physics (including laboratory) and at least two years in chemistry.

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Metallurgical Laboratory (5). Lectures and laboratory work. Laboratory practice in the analysis of iron and steel, fuel and slags, and the assays of lead, copper and zinc ores by wet methods, using approved methods as practiced in technical laboratories of metallurgical works. In the case of students with adequate preparation special work will be given in gas analysis and calorimetric tests on fuels. Five laboratory periods a week. Three terms, Professor N. W. Lord.

## Philosophy

(University Hall, Rooms 33, 49, 50, 51)

The courses in this Department offer a wide range of philosophical study. Courses additional to those here announced will be arranged for graduate students who contemplate advanced work in particular subjects.

The library of the University contains a well selected body of works in Philosophy and is receiving valuable additions. The psychological laboratory occupies three rooms on the fourth floor of University Hall. Students of any degree of preparation, will find the equipment adequate to their purposes.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Most of the following courses are designed primarily for graduate students. But many of them may be pursued with profit by undergraduates who have had as much as two years of preparation, and a few of them by those who have had but a single year of previous work.

- Conspectus of Philosophy (23). Three times a week. First term. Professor Scott.
- **Theory of Knowledge** (24). Three times a week. Second term. Professor Scott.
- Metaphysics (25). Three times a week. Third term. Professor Scott.

  Course 23 proposes a logical survey on the whole field of philosophy, determining the content, boundaries, and relation several departments, and investigating as far as time permits the conceptions and problems of each. Courses 24 and 25 constitute a continuous study in fundamental philosophy, the former concerning itself primarily with the subjective, and the latter with the objective, aspects of the problems considered. Theses will be required during the year, not less than one for each term.
- Advanced Psychology (26). Twice a week. Three terms. Dr. Davies. This course will include during the first two terms an analytic and genetic treatment of selected topics; and in the third term the more important psychological theories will be presented and an attempt made to formulate a general theory of mental life.
- Research Work in Experimental Psychology (30). Twice a week.

  Three terms. Hours to be arranged. The psychological laboratory is open to students with suitable preparation to prosecute original investigations. General Psychology and Logic are required as preparation for this work. The arrangement of hours will be subject to the needs of the individual student. At least two hours must be taken. Assistant Professor Haines.
- Plato (31). Twice a week. Three terms. Dr. Davies.
- Aristotle (32). Twice a week. Three terms. Dr. Davies.

  Only one of these two courses will be given each year, but it will be course 31 or 32, as the class may elect.
- **Descartes and Spinoza** (33). Three times a week. First term. (Not offered in 1903-1904.)
- Locke and Leibnitz (34). Three times a week. Second term (Not offered in 1903-1904.)
- **Berkeley, Hume and Reid** (35). Three times a week. Third term. (Not offered in 1903-1904.)
- Kant, Fichte, Schelling and Hegel (36). Three times a week. Three terms. Dr. Davies.
  - Courses 33, 34 and 35 constitute one year's work, and alternate with course 36. The first three are preparatory to the last. Assigned portions of the leading works of the thinkers named will be studied and discussed, and an attempt will be made to obtain a clear conception of the author's system as a whole, and of his position on particular important problems of philosophy.

- Later German Philosophy (37). Three times a week. Three terms.

  Assistant Professor Haines.
- Recent and Current Philosophy (38). Three times a week. Three terms. Assistant Professor Haines.
  - Only one of the two foregoing courses will be given in 1903-1904. Which one shall be given will be decided on consultation with the class.
- Comparative Psychology (42). Two hours a week. Three terms. (Omitted in 1903-1904. Alternates with 46.)
- Scientific Method (43). Two hours. Assistant Professor Haines.
  - A study of the general methods of scientific procedure,—the general methods by which science grows. The more general features of all methods of science which have proved themselves efficient, are the subject matter of the course. Candidates for the work should have an intimate acquaintance with some one science.
- Advanced Ethics (44). Two hours a week. Three terms. Professor Scott. Some of the leading problems and theories of ethics will be studied. It is open only to students who have had elementary ethics.
- **Esthetics** (45). Two hours a week. Three terms. Dr. Davies. This course will consider the subject of the beautiful from three points of view. 1, Historical. 2. Psychological. 3. Philosophical.
- **Abnormal Psychology** (46). Two hours a week. Three terms. Assistant Professor Haines.
  - A systematic study of the abnormal states of the human mind. A psychological analysis of the various forms of insanity, for the student of psychology, education and medicine. Defendorf's Clinical Psychiatry will be used as text, supplemented by lectures; and the exceptional facilities which Columbus affords for such work will be utilized. (Alternates with Course 42.)

### II. FOR GRADUATES.

- Philosophy of Science (27). Twice a week. Three terms. Professor Scott.
  - Course 27 has for its purpose to investigate the postulates and concepts of physical science. It will include such subjects as casuality, mechanism and teteology, the existence and nature of matter and mind, the relation between them, man's place in nature.
- Philosophy of Religion (28). Twice a week. Three terms. Professor Scott.
  - This course includes a study of the nature of religion, the foundations or religious belief, the relations of philosophy to religion, and religious problems, such as the existence and nature of God, the problem of evil, and human immortality. The two foregoing courses, are alternative. Which of them will be given in 1903-1904 will be decided after consultation with those who elect the work.

- Pyschological Seminary (39). A research course for advanced students.

  Two hours a week. Three terms. Assistant Professor Haines.
- **Ethical Seminary** (40). Two hours a week. Three terms. Professor Scott.
  - This course will be devoted in 1903-1904 to the historical and critical study of one or more of the great problems of ethics. The work will consist of assigned readings papers and discussions.
- Philosophical Seminary (41). Two hours a week. Three terms. Dr. Davies.
  - This course will undertake a systematic study of the problem of knowledge.

## Physics

(University Hall, Rooms 10, 14, 23 and 24)

The department has an excellent equipment of apparatus, principally chosen for accurate measurement in the laboratory. Among the principal pieces of apparatus are a dividing machine by Fauth & Co.; chronometers by Parkinson & Frodsham and by Negus, the latter a break-circuit; a chronograph by Fauth & Co.; a Hipp's chronoscope; cathetometers by Salleron and by the Geneva Society; Rignault's apparatus for vapor tension, for expansion of gases and for specific heat; Melloni-Tyndall apparatus for radiant heat; Rutherford and Rowland diffraction gratings; Rowland's spectrum photographs; spectroscopes by Brashear, Browning, Apps and others; Duboscq's complete apparatus for projections in polarized light; a variety of Sound apparatus from Koenig; portable and quadrant electrometers; galvanometers of high and low resistance; standard resistance coils, with Cavendish laboratory certificate; several sets of resistance coils and bridges; a Kew magnetometer; Kelvin standard balances; Weston ammeters and voltmeters; standards of self-induction; standard battery cells; photometric standards and photometers; X-ray apparatus, etc. Under the laws of Ohio the professor of physics is ex officio State Sealer of Weights and Measures, and all of the standard weights, measures and balances received from the United States government are in the rooms of the department.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Laboratory (13). Three to five times a week. Three terms. Prerequisites, a year's work in General Physics of college grade and a course in the laboratory. May be taken as a graduate minor. Professor Thomas, Professor Cole.
- **Theoretical Physics** (14). Three to five times a week. Three terms. For 1903-1904 the following subjects are offered:
  - (a) Advanced Light, based upon Preston's "Theory of Light," with frequent reference to the original memoirs of Newton, Fresnel, Young, Fraunhofer, Michelson, Rowland, Stokes, Zeeman, etc.
     (b) Radiation, with special reference to the electro-magnetic

theory of light. (c) Theory of Heat. (d) Theoretical Physics. Christiansen. A course in Differential Equations or Analytical Mechanics is desirable as preparation. (e) Evolution of Experimental Physics, with special reference to recent methods and results.

Prerequisites for each of the above subjects, a year of College Physics and Calculus. A laboratory course in Physics must precede or accompany. Professor Thomas, Professor Cole.

#### II. FOR GRADUATES.

Advanced Laboratory (15). Three or five times a week. Three terms.

Research work. Prerequisites, two years of laboratory work in Physics. Professor Thomas, Professor Cole.

## Physiology

(See Anatomy and Physiology)

## Political Economy

(See Economics and Sociology)

### Political Science

(University Hall, Rooms 15, 27, and 18)

The advanced work in political science is in all cases closely dependent upon historical knowledge, the amount and kind varying for different courses. In general the graduate student should have had a collegiate course in modern political institutions, European and American, (the equivalent of Political Science 1, Arts College Bulletin, 1903-1904, page 38), and in English and American political history. A reading knowledge of either French or German is especially desirable.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- **The Government of Dependencies** (6). A study of the government of dependencies by the home country, and of the political and legal relations between them. Twice a week, first term. Professor Knight.
- **Colonial Institutions** (7). A study of local institutions, civil service and administration, and the development of local self-government in the leading colonies of to-day. Twice a week, second term. Professor Knight. This must be preceded by the course in Dependencies.
- Municipal Government (8). A study of the development, status and government of modern municipalities, and a comparative study of recent American municipal charters. Twice a week, third term. Professor Knight.

Theories of Government, Sovereignty and Political Liberty(10). An introductory survey of the origin of political theories, followed by an historical study of the political doctrines expressed in American constitutions and a critical examination of these doctrines in the light of recent European and American thought. Twice a week throughout the year. Assistant Professor Smith.

Open to those who have obtained the instructor's permission.

- Comparative Politics (12). A study of parties and political methods in legislation, administration and elections in the United States, Great Britain and its colonies, France, Germany, and the leading European countries. Twice a week throughout the year. Assistant Professor Smith.
  - Open for the year 1903-1904 to those who have taken a full year of collegiate work in European or American History, and a course in political institutions.
- **Seminary** (American History 10). For investigation and discussion of political institutions and administration, especially American national, state and local. Two hours a week through the year. Professor Knight, Assistant Professor Smith.

## Rhetoric and English Lauguage

(University Hall, Rooms 38, 40, 42, 44, 55)

For admission to graduate work in this department the student should have worked in English Languages and Literature during at least two years of his college course. He should be well-grounded in Psychology and should have a reading knowledge of two languages besides English.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Problems in Rhetoric and Criticism (12). Two hours a week through the year. This course begins with a short series of lectures on the Development of Rhetorical and Critical Theory, after which each student undertakes the thorough investigation of some one problem in rhetoric and criticism, reporting results each week. Professor Denney.
- **The Teaching of English** (13). Once a week through the year. A discussion of principles and methods, plans for courses, and the reports of the English Conferences. Each member of the class will present a paper each term upon a subject assigned for investigation. Professor Denney.
- Old English Prose and Poetry (16). Twice a week through the year.

  At first, attention will be paid to the purely linguistic features, the relations of Early English to the kindred Teutonic languages; later will be studied the beginnings of English literature in prose and poetry. Assistant Professor McKnight.

- Beginnings of English Story (17). Beowulf and minor Old English narrative poems studied in connection with the related epic and romantic stories in Norse and in early German. Celtic (mainly Arthurian) story in English studied in connection with the related stories of Celtic and in French. English stories belonging to the Charlemagne cycle. Third term. Assistant Professor McKnight.
- Middle English Prose and Poetry (18). Twice a week through the year. First will be studied the development in sound and in orthography; later, the transition in literature, and the evolution of modern yerse. Assistant Professor McKnight.

#### II. FOR GRADUATES.

**Graduate Seminary** (20). (a) Rhetorical Theory and Criticism. Professor Denney. (b) Old and Middle English Philology. Assistant Professor McKnight.

## Romance Languages and Literatures

(University Hall, Rooms 35 and 34)

For admission to courses 4 to 13, and 16 to 18, inclusive, in French, the student must have studied that language two full years, four hours a week each year. For admission to courses 14 and 15 in French, the student must have pursued the work for three full years, four hours a week each year. For admission to course 2 in Spanish, one full year's work, four hours a week, is required.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

## A. FRENCH.

- **French Comedy** (4). Three hours a week. First term. Study of the growth of French Comedy, with work centering upon Moliére and Regnard. Lectures and collateral reading. (Given biennially, alternating with course 16. Not offered in 1903-1904).
- French Tragedy (5). Three hours a week. Second term. Lectures and readings. Corneille, Racine and Voltaire. (Given biennially. Not offered in 1903-1904).
- Seventeenth Century Prose (6). Three hours a week. Third term.

  Critical study of Descartes, Pascal, Bossuet and others, supplemented by lectures. (Given biennially. Not offered in 1903-1904).
- **Advanced Prose Composition** (7). One hour a week throughout the year. Intended for advanced students who desire special training on the practical side of the language. Profesor Bowen.
- Literary Criticism in France (8). Two hours a week. First term.

  Readings and lectures. Selections from Sainte Beuve, Faguet,

  Lemaître and others. Associate Professor Bruce.

- Recent French Prose (9). Two hours a week. Second term. Rapid reading, with lectures. Critical study of some of the leading prose writers of the present, such as Bourget, Daudet, Loti, Zola and others. Associate Professor Bruce.
- Practice in Speaking and Writing French (10). Based on Daudet's Stories. Two hours a week. Third term. Students wishing to elect this course must have the consent of the instructor in charge. Associate Professor Bruce.
- French Travel-Writers (11). Two hours a week. First term. Readings and lectures. Scenes of travel from Gautier, Hugo and Dumas. (Alternates with course 8. Not offered in 1903-1904).
- **Eighteenth Century Prose** (12). Two hours a week. Second term. Readings and lectures. Selections from Voltaire (ed. Cohn and Woodward) or others. (Alternates with course 9. Not offered in 1903-1904).
- Advanced Conversational Practice (13) Based on stories of Coppée and Maupassant. Two hours a week. Third term. Students wishing to elect this course must have the consent of the instructor in charge. (Alternates with course 10. Not offered in 1903-1904).
- French Seminary A (14). Three hours a week throughout the year. Given biennially. Not offered in 1903-1904. The subjects for the year 1904-1905 will probably be: (1) The Development of the French Novel, and (2) Recent Tendencies of French Drama. Towards the close of the year several lectures will be given on Methods of Teaching French and the Teacher's Equipment.
- French Seminary B (15). Three hours a week throughout the year. Given biennially. For 1903-1904 the subjects will be: (first half-year) Old French (Cledat, Morceaux choisis), with emphasis of la Chanson de Roland (Paris); (second half-year) Sixteenth Century French (Darmesteter et Hatzfeld, Morceaux choisis), with critical study of Montaigne. Professor Bowen.
- French Comedy of the Eighteenth Century (16). Three hours a week.

  First term. Lectures on the growth of French Comedy, with
  work centering upon Marivaux and Beaumarchais. Professor
  Bowen.
- French Society in the Seventeenth Century (17) Three hours a week.

  Second term. With special reference to the Precieux Movement. Crane's Selections. With lectures. Professor Bowen.
- Precursors of French Romanticism (18). Three hours a week. Third term. Rousseau, Chateaubriand (Bowen's Atala and René) and Madam de Stael. With lectures. Professor Bowen.

#### B. SPANISH

Advanced Spanish (12). Two hours a week throughout the year. The modern novel; classical drama; Don Quixote; with lectures; advanced composition and conversation. Professor Bowen.

#### Sanskrit

(See Germanic Languages)

### Sociology

(See Economics and Sociology)

## Spanish

(See Romance Languages)

## Zoology and Entomology

(Biological Hall, First and Third Floors)

The department occupies the first and third floors of Biological Hall, providing lecture rooms, one general and five special laboratories, museums, room for storage, work shops, aquaria, cold-storage, photography, etc. The laboratory equipment includes microscopes, microtomes, inclubators, injectors, etc., for most approved methods of work in morphology, embryology and neurology. The collections include a fine series of skeletons, a number of large mammals, series of the birds of Ohio, of the birds of North America, of Ohio fishes, of mollusks and especially rich collections of insects particularly in Odonata, Hemiptera and Diptera.

The department possesses a special library the nucleus of which was the scientific library of the late Professor Kellicott, which was generously donated to the department. This has been increased by gifts of special papers from a number of the leading investigators of the country. The private library of the professor is also accessible for reference.

Students entering upon graduate work in this department are expected to be familiar with the elements of chemistry, physics and botany; to have a reading knowledge of French and German and to have had at least two years' work in zoology, the equivalent of Zoology 1 (general zoology) and Zoology 2 (Comparative Anatomy of Vertebrates). The department can offer good facilities in embryology, neurology and various phases of entomological work.

#### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

**Invertebrate Morphology I** (15). Three or five times a week. First term. Devoted to lower invertebrates, especially Protozoa and Coelenterata. Lectures and laboratory. Professor Osborn.

Invertebrate Morphology II '16). Three or five times a week. Second term. Will usually be devoted to Worms and Mollusks. Lectures and laboratory. Professor Osborn.

- Invertebrate Morphology III (17). Three or five times a week.

  Third term. Usually devoted to Arthropoda. Lectures and laboratory. Professor Osborn.
- Invertebrate Embryology (18). Three or five times a week. Three terms. Korschelt and Heider used as a basis. Lectures and laboratory. Professor Osborn.
- Comparative Neurology (21). Three or five times a week. Three terms. Includes study of brain and spinal cord in all classes of vertebrates. Edinger Lectures on the Central Nervous System is followed and numerous treatises and special papers consulted. Lectures and laboratory. Associate Professor Landacre.
- Cytology (22). Three or five times a week. Three terms Firtwig, Cell and Tissues, and Wilson, The Cell in Development and Inheritance. Professor Osborn.
- Entomology (23). Three or five times a week. Three terms. Advanced practical course for those wishing to investigate some special groups of insects or to fit themselves for professional work in Entomology. Lectures, laboratory and field work. Professor Osborn,
- Research Work (25). Five or ten times a week. Time arranged with individual students. Professor Osborn.
- Seminar (26). Discussion of assigned subjects, reports on research work, current literature, etc. Advanced and graduate students in the department are expected to register in this course. Once each week, three terms. One hour. Professor Osborn, Associate Professors Hine and Landacre.

## Graduate Students\*

## 1902-1903

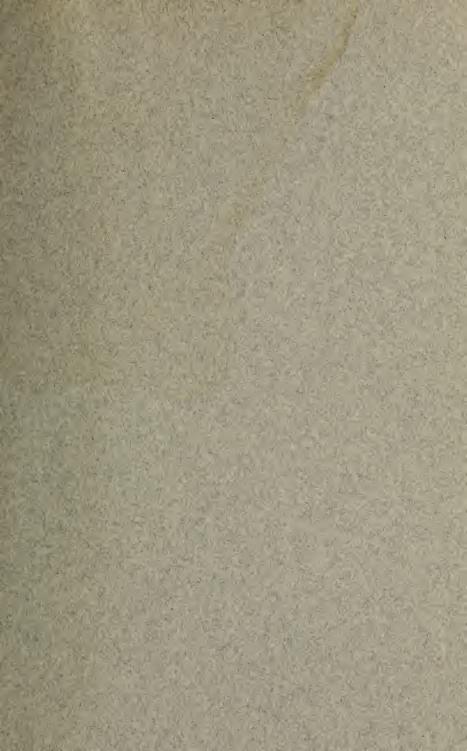
#### RESIDENT GRADUATES

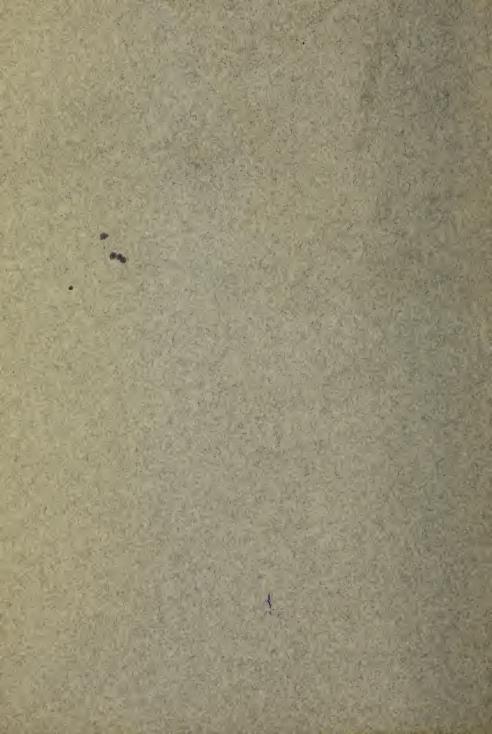
Andrews, Catharine Emily, B. A. (Wellesley College)Columbus Chemistry, Agricultural Chemistry.
Brace, Edith Minerva, B. S., (University of Nebraska)Columbus
Burr, Harriet G., B. A
Botany, Zoology.
BUTCHER, PREDERIC ERIC, B. PH
CHANDLER, GRACE ELEANOR, B. A. (University of Chicago)Columbus German, French.
CONVERSE, EDWARD JASPER, B. A., B. D. (Yale University)Columbus
Соок, Melville Thurston, A. B. (Leland Stanford University) A. M. (De Pauw University)
COOVER, WINFRED FORREST, B. A., (Otterbein University)Columbus Chemistry, Geology, Physical Chemistry.
Coursault, Jesse Harliaman, B. A., M. A
DERBY, ALICE GREENWOOD, B. PH
Easton, Ernest Doane, B. S
EISENLOHR, BERTHOLD AUGUST, B. PH
EWALT, CLARA CONVERSE, B. PH
Frankham, Charles R., B. A. (Otterbein Unversity)Westerville American History, European History, Economics.
GAUCH, JAMES ARLANDO, B. A
Harrington, Evaline, B. Ph. (Wooster University)Columbus English Literature, Rhetoric.  Huntington, Charles Clifford, B. PhYellow Springs Economics, Political Science.
HUNTINGTON, CHARLES CLIFFORD, B. PH
Jones, Grace Latimer, B. A. (Byrn Mawr College), A. M., Ibid
Columbus
Kauffman, Henrietta Christine, B. PhColumbus
Kirby, Harriet R., B. AColumbus
Latin, Greek.
KLEIN, DAVID, B. PH
Muiree, Frederic John, B. A
Mumma, Marion Wilson, B. S
Pennock, Gilbert Lee, B. A. (Antioch College)Yellow Springs Rhetoric, English Literature.

<sup>\*</sup> The subjects constituting the work of candidates for higher degrees are indicated under their names. The subject first named is the major study.

RASOR, SAMUEL EUGENE, B. S., M. A
Zoology, Botany.  RIDDLE, LUMINA COTTON, B. S., M. S
Sanders Ernest Avery, B. A. (Otterbein University)Westerville Botany, Zoology.
SANDERS, JAMES GLOSSBRENNER, B. PH (Otterbein University) Botany, Zoology.
Westerville
Sater, Maroe, B. A. (Smith College)
SNIVELY, HARRY H., B. A
STARLIN, CHARLES ETHELBERT, B. S. (Miami University)Preston
SWEZEY, OTTO HERMAN, B. A. (Lake Forest University), M. A.
(Northwestern University)
Talbot, Mignon, B. A
Paleontology, Zoology.
Webb, Edward Nathan, B. S
WHETSTONE, ARNOT WILSON, B. PH (Otterbein UniversityVan Buren Botany, Zoology.
WILLIAMS, HERBERT O., B. A., M. A
registered at lake laboratory, 1902.
Detmers, Fredericka, B. S., M. S
FLYNN, MAUD, B. SColumbus
Moseley, Edwin Lincoln, A. M. (University of Michigan)Sandusky
Wells, William Edward, B. Ph., (Iowa College), M. S., (Den-
nison University)
CANDIDATE FOR MASTER'S DEGREE STUDYING IN ABSENTIA.*
ROGERS, Andrews, B. Ph
Rhetoric, English Language.

<sup>\*</sup>Registered in candidacy prior to abolition (in 1901) of in absentia privilege.





THE LIBRARY Graduate School College of Arts, Philosophy and Science

# Ohio State University.

#### Announcement for 1904 - 1905.

University Bulletin.

Series 8. Number 25

#### DAYS AND DATES.

1904.

First Term begins — Registration Day — Tuesday, September 20.

President's Annual Address — 11 A. M. Friday, September 23.

Latest Date of Admission to Candidacy for a degree at the Commencement of June, 1905 — October 1, 1904.

First Term ends — Wednesday, December 21.

1905.

Second Term begins — Registration Day — Tuesday, January 3.

Second Term ends - Friday, March 21.

Third Term begins — Registration Day — Wednesday, April 5.

Latest date for submitting Doctor's thesis — May 1.

Latest date for submitting Master's thesis — June 1.

Commencement — Wednesday, June 21.

## ORGANIZATION.

The Ohio State University, located at Columbus, is a part of the public educational facilities maintained by the state. It comprises six colleges:

The College of Agriculture and Domestic Science.

The College of Arts, Philosophy and Science.

The College of Engineering.
The College of Law.

The College of Pharmacy.

The College of Veterinary Medicine.

The Graduate School to which this bulletin is exclusively devoted is an organic subdivision of the College of Arts, Philosophy and Science, having the administration of graduate students and their work.

Columbus.

Published by the University. Entered at the Postoffice, Columbus, Ohio, as second-class matter.

# Graduate School

## Organization

In order better to meet the rapidly increasing demands made by gradnates of Ohio Colleges upon the University for graduate instruction, the Faculty of the College of Arts, Philosophy and Science has established the Graduate School and systematically organized the scheme of graduate work. The object of the School is to emphasize and utilize in highest degree the facilities which the University affords for advanced students and to secure a more effective and systematic arrangement and supervision of the higher work. The School has no distinct faculty separate from the College of which it is a part, but the work of graduate students within each department is with but few exceptions carried on under the immediate direction and oversight of the head of the department. Though the Graduate School is organically within the College of Arts, Philosophy and Science, the supervision and administration of all matters connected with the School has been lodged in the Administrative Board of the Graduate School, consisting of the Dean and four other members chosen from the Faculty.

## Administrative Board

Professor George Wells Knight, Ph. D., Chairman, 15 University Hall. Professor Samuel Carroll Derby, A. M., 28 University Hall. Professor William McPherson, Ph. D., Townshend Hall. Professor Herbert Osborn, M. Sc., 1 Biological Hall. Dean Joseph Villiers Denney, A. B., 44 University Hall.

# Facilities for Graduate Work

The facilities possessed by the University for study and research are such as to ensure profitable opportunity for advanced and highly specialized work in both scientific and non-scientific fields.

### THE LIBRARIES.

THE UNIVERSITY LIBRARY—The University Library contains over fifty thousand volumes. There are also department libraries, collections of books specially needed in connection with laboratory and class room work, deposited in the several departments. During the University year the Library is open six days in the week, vacations and legal holidays being excepted. From Monday until Friday the hours are from 7:30 a.m. until 9:30 p.m.; Saturday from 7:30 a.m. to 4 p.m.

STATE LIBRARIES — Students are privileged in being near the two State Libraries. The Ohio State Library numbers more than 88,000 volumes and is a circulating one for all the citizens of Ohio. It is of great value for students, especially in English literature, history, economics and political science. The State Law Library is the largest and most complete law library in the State. It contains complete sets of the English, Scotch, Irish, Canadian, United States and State reports, statutes and digests. The important legal periodicals are on file.

CITY LIBRARIES — The students of the University, as residents of Columbus, have access to the City Library and the Public School Library, under the usual regulations. The City Library numbers 37,000 volumes. The Public School Library numbers about 55,000 volumes.

#### LABORATORIES.

The laboratories of the University are the most extensive in Ohio and are well equipped for graduate and special research. The following list of laboratories, which omits those that are exclusively for the professional and technical Colleges of the University, gives an indication of the opportunities available for scientific research and investigation:

At the University — Astronomical, Bacteriological, Botanical, Chemical, Entomological, Geological (both Historical and Petrographical), Histological, Physical, Physiological, Psychological, Zoological.

AT SANDUSKY, Оню — The Lake Laboratory, maintained by the University during the summer, for work in Botany, Entomology, Physiology

and Zoology. For graduate students in these lines this laboratory affords exceptional opportunities.

SEMINARIES.

As a large part of the work of graduate students consists of individual research carried on under the personal direction of the professor in charge, seminaries have been organized in several of the departments to ensure the systematic supervision of such work. By this arrangement advanced students within a department are brought together for cooperative research and for comparison and criticism of methods and results. At present the following seminaries are organized, some of them exclusively for graduates and others for graduates and advanced undergraduates:

American History, Chemistry, Economics, Education, English Literature, English Philology, Ethics, French, German, Latin, Philosophy, Physics, Political Science, Rhetoric, Sociology, Zoology.

## Admission

Registration as a student in the Graduate School is open to all graduates of the College of Arts, Philosophy and Science of this University, and to graduates of other colleges of this University, or of other universities or colleges who satisfy the Administrative Board that they are qualified to pursue with profit the work here offered in the lines of study which they wish to carry on.

Graduates of institutions of which the undergraduate courses of study are not substantially equivalent to the course prescribed in this College for the bachelor's degree will be required to do an additional amount of undergraduate work, or to prolong their term of residence, before being admitted to full candidacy for a higher degree.

Bachelors of this College or of other institutions who do not wish to become candidates for a higher degree, may be admitted as special graduate students.

Application for admission as a graduate student should be addressed to the Chairman of the Administrative Board of the Graduate School. Full details should be forwarded of the candidate's previous course of study, the degree desired, and the special preparation already had in the major and minor studies to be pursued.

As the first question to be decided is whether the degree already taken by the applicant is substantially the equivalent of the degree given in this College, full information on this point is required. This should include a general statement of the character of the course pursued with special reference to the amount of mathematics, science and the languages, including English. Blank forms of application may be obtained from the Chairman of the Administrative Board.

The second question touches the qualifications of the applicant to enter upon advanced work in the special departments of study in which he desires to work. In order to determine this, a detailed statement is necessary of the previous course of study in the major and minor subjects which the applicant desires to pursue. Official evidence of the above statements must be submitted before the applicant is admitted to full registration.

No graduate student will be registered as a candidate for a higher degree later than October first of the academic year in which he seeks the degree.

5

## Course of Instruction

For Candidates for Higher Degrees. Unlike the curriculum for undergraduates, the work of candidates for higher degrees is not confined to specific courses of instruction regularly offered in the College. Each student chooses a major study and one or two minor studies, which must be approved by the Administrative Board before he enters upon his work. This may consist of attendance upon specified courses or of private research or reading and report thereon. The professors in charge of the studies chosen constitute a special committee, the professor in charge of the major study being the chairman, to arrange the details of the work comprising the major and minor studies, to supervise the work of the student, to examine and pass judgment on the thesis and to conduct the final examination.

Upon the completion of the prescribed course a final examination upon the entire work undertaken for the degree is held under the direction of the special committee, except that at the option of the committee the examination upon the minor or minors may be held whenever such minor or minors are completed.

With the approval of the Administrative Board a candidate for a higher degree may elect specific courses, additional to the major and minor studies. For such election any course offered in the College of Arts, Philosophy and Science is open to candidates who satisfy the head of the department that they are qualified to pursue it with profit. The amount of such additional elective, if any, which the student may take must in each case be determined by the Administrative Board, and it is to be understood that such work, if allowed, will not be credited towards the degree for which the candidate is working.

For Graduate Students not Candidates for a Degree — Graduate students who are not seeking a higher degree are not required to designate major and minor studies, but may select their work with a view to the special purpose for which they are in attendance at the University. Any course of instruction announced in the College of Arts, Philosophy and Science is open for election by graduate students not candidates for a degree who satisfy the head of the department that they are qualified to pursue it with profit. But the list of electives so chosen must in each case be approved by the Administrative Board before the student enters upon his work.

Should such student subsequently desire to become a candidate for a higher degree the Administrative Board will determine how much, if any, of the work previously done as a graduate student can be counted as a part of the major and minor studies requisite for the degree sought.

## Requirements for Higher Degrees

The University confers two higher degrees, Master of Arts and Doctor of Philosophy, upon the completion of approved courses of resident graduate study.

The Master's Degree. The degree of Master of Arts is open to those holding the Bachelor's degree who have been admitted to full candidacy as indicated above (see Admission, second paragraph). A residence of at least one year at this University wholly devoted to the work for the degree is required. With the consent of the Administrative Board the work of candidates for the Master's degree may be distributed over more than one year. The Master's degree is not conferred for study in absentia.

A holder of the Bachelor's degree will be recommended for the degree of Master of Arts upon the completion of the prescribed term of residence, and passing a final examination in the course of study laid out for him, covering a major and one or two minor subjects approved by the Administrative Board, and unless waived by the same body, the submission and acceptance of a thesis, on some subject within the field of the major study. The major study must be in advanced work; the minor study or studies may, with the approval of the Administrative Board, be of a more elementary character.

The subject for the Master's thesis must be chosen and approved by December 1st, and the completed thesis must be submitted not later than June 1st. A typewritten copy of the accepted thesis must be deposited with the University before the candidate will be recommended for a degree.

The Doctor's Degree — The degree of Doctor of Philosophy is open to those holding the Bachelor's degree who have been admitted to full candidacy as indicated above (see Admission, second paragraph), and who also fulfill the terms of this and the next paragraph. At least three years of resident graduate work is required, but on approval of the Administrative Board the first year, or the first two years, may be spent at another university which offers equivalent graduate work.

Save in the case of persons who come properly accredited from a graduate school of some other university no student will be enrolled as a candidate for the degree of Doctor of Philosophy until he has been in residence as a graduate student at this University for one year. Formal application for enrollment as a candidate for the degree must be made at least one year before the candidate expects to present himself for final examination. No person will be admitted to candidacy for the degree who does not possess at the time of enrollment a reading knowledge of French and German.

Each candidate for the Doctor's degree must pursue a major study and

two allied minor studies, one of which may be within the same department as the major. All of them must be advanced, specialized work. The degree is intended to represent not a specified amount of work, covering a specified time, but long study and high attainment in a special field.

Each candidate is required to prepare a thesis within the field of his major study, involving an extended research or investigation and constituting an original contribution to knowledge. The thesis for the Doctor's degree is one of the most essential factors of the candidate's work, since it measures his accuracy and power of independent investigation. The preparation of an acceptable thesis will usually require the greater part of an academic year.

After the acceptance of the thesis the candidate will be examined by his special committee upon the entire work undertaken for the degree, except that at the option of the committee the examination on the minors may be held whenever such minors are completed.

Each candidate is required to have his accepted thesis printed and to deposit fifty copies with the University library.

The subject of the thesis for the Doctor's degree must be chosen, and approved by the special committee, by November 1st of the college year in which the applicant expects to take the degree. The completed thesis must be submitted not later than May 1st. The final examination will be held not later than June 1st.

# Announcements of the Departments

The following list presents a brief description of the advanced courses offered in the Graduate School suitable to form constituent parts of "major" and "minor" studies. Discrimination has not been attempted in all cases between purely graduate courses and those which are also open to advanced undergraduates in the College of Arts, Philosophy and Science. Many of the courses mentioned are of the latter class, but are suited to the needs of many holders of a bachelor's degree.

It should be remembered also that in many cases the work of graduate students consists of individual reading, experiment, investigation and research in some special line or subject not covered by any announced "course" and not involving or calling for attendance upon lecture or class. Such graduate work is obviously incapable of announcement and description as a "course." For further information as to any course announced in the following pages, and regarding the special work mentioned above, consult the head of the department concerned.

In the following announcements the figure in parenthesis immediately following the subject of the course, is the number of the course as it appears in the University Catalogue, where a fuller description is in some instances given.

## American History and Political Science

I. AMERICAN HISTORY.

(University Hall, Rooms 15, 27, 18 and 48.)

The courses named below presuppose a good foundation course of at least a year of collegiate character in the political history of the country from the early colonial period; also a good collegiate course in European history and in English political history. At least a fair knowledge of American political institutions is expected.

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

The Formation of the United States, 1600-1820 (2). An advanced course covering the political and institutional development of the colonies and the establishment of a federal union. First term, the colonies, 1600-1774; second term, revolution and constitution-making, 1774-

- 1789; third term, the development of democratic national and state governments, 1789-1820. Three times a week throughout the year. (Given biennially. Not offered in 1904-1905.)
- The Slavery Struggle and Its Results, 1800-1885 (4). A study of the development and downfall of slavery in the United States, and its relation to and influence upon government, legislation and political organization. First term, development and status until the Compromises of 1850; second term, secession and civil war, 1850-1865; third term, reconstruction and its effects, 1865-1885. Three times a week throughout the year. Professor Knight.
- American Diplomacy, Foreign Relations and Expansion (6). An advanced course comprising an historical study of the foreign relations, problems and policy of the United States, including the acquisitions of territory and their effects on our institutions and government. Three times a week throughout the year. (Given biennially. Not offered in 1904-1905.)
- History of Political Parties, 1774-1900 (7). A detailed study of the origin, development and structure of political parties in the United States with particular attention to their social composition, geographical distribution, organization and political methods. Three times a week throughout the year. Mr. Spencer.
- Seminary for Research Work in American History and Political Science (10). Two hours (at one meeting), three terms. Professor KNIGHT.
  - Open on permission of the head of the department to those who have had two full collegiate courses in American History and at least one collegiate course in political science.
- The Teaching of American History (11). A course in methods of teaching American history, especially in the secondary schools, designed for advanced students preparing themselves as teachers. Once a week, second and third terms. Professor Knight.

#### II. FOR GRADUATES.

- Graduate Seminary in American History and Institutions (12). Some limited field will be made the subject of co-operative study each year by the seminary. So far as possible, the investigation will be in the sources. The subject for 1904-1905 will be the Revolutionary Period, with special reference to the diplomatic history from 1776 to 1800. Two hours a week at one meeting, three terms. Professor Knight.
- Individual Investigation (13). Each year special courses of varying scope are mapped out to meet the needs of individual graduate students. For 1904-1905, these lines of investigation will lie prin-

cipally in the reconstruction period. Under the personal direction of the instructor each student carries on his reading and investigation independently, reporting at stated intervals to the instructor. Professor Knight.

## II. POLITICAL SCIENCE.

## (University Hall, Rooms 15, 27, 48 and 18.)

The advanced work in political science is in all cases closely dependent upon historical knowledge, the amount and kind varying for different courses. In general, the graduate student should have had a collegiate course in modern political institutions, European and American, and in English and American political history. A reading knowledge of either French or German is especially desirable.

## FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- The Government of Dependencies (6). A study of the government of dependencies by the home country, and of the political and legal relations between them. Twice a week, first term. Professor KNIGHT.
- Colonial Institutions (7). A study of local institutions, civil service and administration, and the development of local self-government in the leading colonies of to-day. Twice a week, second term. Professor Knight. This must be preceded by the course in Dependencies.
- Municipal Government (8). A study of the development, status and government of modern municipalities, and a comparative study of recent American municipal charters. Twice a week, third term. Professor Knight.
- Theories of Government, Sovereignty and Political Liberty (10). An introductory survey of the origin of political theories, followed by an historical study of the political doctrines expressed in American constitutions and a critical examination of these doctrines in the light of recent European and American thought. Twice a week throughout the year. Mr. Spencer. Open to those who have obtained the instructor's permission.
- Comparative Politics (12). A study of parties and political methods in legislation, administration and elections in the United States, Great Britain and its colonies, France, Germany, and the leading European countries. Twice a week throughout the year. Mr. Spencer.
- Seminary (American History 10.) For investigation and discussion of political institutions and administration, especially American, national, state and local. Two hours a week through the year. Professor KNIGHT.

Administration in the United States (13). A study of the government in action: Federal Administration, including the President and the Executive Departments; State Administration, including the Governor, the Executive Departments and the political subdivisions of the state; Administration in Ohio. Two hours a week throughout the year. Assistant Professor Tuttle.

## Anatomy and Physiology

(Biological Hall, Rooms 12 and 20.)

The following courses for advanced students presuppose at least one year's collegiate work, including lectures and laboratory work in Human Anatomy and Physiology and a course in Chemistry, including laboratory work. The work of the graduate student in the following courses will be laid out to meet individual cases when there is a specific end in view, and may be taken in some line in histology, or chemical or experimental physiology.

FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Physiological Laboratory (9). Three times a week, three terms. Laboratory hours to be arranged. Professor Bleile.

Physiological Laboratory (11). Five times a week, three terms. Hours to be arranged. Professor Bleile.

## Astronomy

(The Emerson McMillin Observatory.)

As a prerequisite for the advanced work in Astronomy the student, in addition to a collegiate course in general Astronomy, must have had Mathematics through the calculus. Students wishing graduate work in Astrophysics, as noted below, need not have had the general Astronomy, provided they have had a good collegiate course in the theory of Physics and at least one full year of Laboratory Physics, and Mathematics through the calculus.

FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Astronomy, Geodesy and Least Squares (2). Lectures on practical Astronomy, supplemented by practice with the instruments of the Emerson McMillin Observatory. Three times a week, three terms. Professor H. C. LORD.

Advanced Astronomy (4). Lectures, Reading and Laboratory work from 3 to 5 hours a week, three terms. Courses will be offered in Theoretical Astronomy or Astrophysics, as students may elect. Hours to be arranged. Professor H. C. LORD.

# Bacteriology

(Veterinary Laboratory Building.)

FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Bacteriology (5). One lecture, two laboratory periods, of three hours each, weekly through the year. First term general, second and third terms special along one of the following lines: a) Pathogenic Bacteria, b) Agricultural, c) Dairy, d) Sanitary Bacteriology and Water Examination, e) Bacterial Chemistry, the products of bacterial action, enzymes, ptomaines, toxines, etc. Professor Morrey.

Advanced Bacteriology (6). More advanced work on lines of previous Course. Five periods a week through the year. Professor Morrey.

# Botany

(Botanical Hall.)

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Prerequisites: Work in advanced Botany for a full year daily, in addition to the elementary Botany of the preparatory high school.

Laboratory Work in Histology and Physiology (25). Three to five laboratory periods weekly. *Three terms*. Laboratory open daily. Assistant Professor Schaffner.

Advanced Laboratory Work in Histology and Microtechnique (26).

Three terms. Laboratory open daily. Assistant Professor Schaffner.

Laboratory and Field Work in Systematic Botany (27). Three to five hours. Three terms. Laboratory open daily. Professor Keller-MAN.

Research Work in Systematic Botany (28). Three terms. Laboratory open daily. Professor Kellerman.

### II. FOR GRADUATES.

Prerequisite: In addition to a course in Elementary Botany the graduate student must have had daily work for a full year in general Alorphology and Physiology, including laboratory work (and for Courses 30 and 31 this must include Ecology and Systematic Botany) and also special work, at least half a year, preparatory to the work to be undertaken.

Research Work in Morphology and Physiology (29). Three terms. Laboratory open daily. Assistant Professor Schaffner.

Monographic Work (30). Three terms. Laboratory open daily. Professor Kellerman.

Research Work in Ecology (31). Three terms. Laboratory open daily.

Professor Kellerman and Assistant Professor Schaffner.

# Chemistry

### (Townshend Hall.)

As a requisite for admission to the following courses, students must have thorough preparation in General Inorganic Chemistry, Qualitative and Quantitative Analysis.

### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Organic Chemistry (8, 9). Laboratory and recitations. The laboratory work includes the preparation of typical organic compounds. Two recitations and six hours' laboratory work weekly. Three terms. Professor McPherson.
- Rare Elements (35). Lectures and recitations. Three times a week, first term. Associate Professor Henderson.
- Physical Chemistry (30). Lectures and recitations. A general study of the principles of physical chemistry. The course presupposes a knowledge of quantitative analysis. Three-times a week, second and third terms. Associate Professor Henderson.
- Physical Chemistry (41). Laboratory. A course in physical-chemical measurements, designed to illustrate the principles and methods of physical chemistry. The course must be preceded by course 30. But students taking course 30 will be allowed to enter upon the laboratory course at the beginning of the second term and carry it along with course 30. Three to five times a week throughout the year. Associate Professor Henderson.
- Quantitative Analysis (39). Laboratory, lectures and recitations. First and second terms. One lecture and two to four laboratory periods. One laboratory period equals three clock hours. Associate Professor Foulk.
- Advanced Chemistry (27). Laboratory and reference work. Hours arranged with the instructor.
  - (a) Organic. Arranged for students who have completed courses 8 and 9. Preparation of typical organic compounds, their purification and analysis. Professor McPherson.
  - (b) Inorganic. Especially designed for students who are desirous of studying the methods of preparation and the properties of a series of inorganic substances, especially the compounds of the rare elements. Associate Professor Henderson.
  - (c) Analytical. Special topics such as the critical study of methods, etc. Associate Professor Foulk.

### II. FOR GRADUATES.

Chemical Seminary (26). Advanced students meet for the discussion of

special topics and current literature. Once a week. Three terms. Professor McPherson and the instructors in the department.

- Organic Chemistry (28). Lectures on special topics. This course must be preceded by courses 8 and 9 and preferably by course 27 (a).

  \*Twice a week, third term. Professor McPherson.
- Research Work, Library and Laboratory Work (29). Five to ten hours.

  First, second third terms. Hours to be arranged. Professor
  McPherson, Associate Professor Henderson, Associate Professor
  FOULK.

# Economics and Sociology

(University Hall, Rooms 17, 18, 20, 29.)

Students expecting to do graduate work in this department should be well equipped in history, economics, and philosophy and should by all means possess a reading knowledge of French or German or both. The location of the University in Columbus will be found to be a great advantage for research in economic lines.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Seminary in Economics (17). Two hours a week at one meeting throughout the year. The work for 1904-05 is outlined as follows: At each alternate meeting a practical problem will be presented and discussed. The other meetings will take up the study of Classical Economists: English, German, and American. Professor HAGERTY.
- Thesis Work (18). Two credit hours, three terms. In this work, as far as possible, only original sources are used, and investigations made from real life. Meetings are arranged with the instructor throughout the year. Professor HAGERTY.
- Problems in Sociology (15). A study of social forces and social institutions. This course involves a study of the various social institutions, the family, church, state, and the various voluntary socities, social, economic, and benevolent. It will also include a study of the customs, conduct, manners, habits of thought, etc., of peoples. The third term will be devoted to a study of the English social pioneers of the 19th century,—Owen, Kingsley, Maurice, Ruskin, etc. Twice a week throughout the year. Professor HAGERTY.

### II. FOR GRADUATES.

Advanced Economics (22). From one to ten hours a week through the year. Hours arranged with the students individually. The aim of these courses is to offer the student an opportunity to specialize along the various lines within the field of the department. Elections will naturally fall under the following heads:

- (a) Theoretical problems.
   (b) Historical problems.
   (c) Practical problems.
   (d) Finance.
   (e) Commerce.
   (f) Sociology (theoretical or practical).
   (g) Statistics.
   (h) Teachers' course.
- When several students elect the same line of work, they may constitute themselves a group and a Seminary will be organized as a nucleus for such work. A Seminary in Sociology (22f) is announced for the year 1904-5. Students should give notice in advance if they desire to enter this course. Professor Hagerty.

# Education

(University Hall, Rooms 51 and 54.)

The minimum requirement for admission to graduate work in the department of Education is Philosophy 18, 19 or equivalent, and one course in the department of Education. (See Bulletin of the College of Arts, Philosophy and Science.)

### FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Child Study (4). The first part of this course is designed to present the general facts and laws of physical growth and development with special reference to school hygiene. The second part aims to describe the characteristic features of child mind, to study the principles and empirical data of mental development with special reference to educational theory and practice. Twice a week throughout the year. Professor Major.
- Science of Education (5). This course aims to develop a consistent theory of education. It is especially intended for students who expect to deal with the larger problems of education which confront the superintendent or principal. Lectures, readings and reports. Three hours a week. Three terms. Assistant Professor Haines.
- Modern Educational Systems (6). A comparative study of education in Germany, England and France. The course will deal briefly with the history of these systems, but chiefly with their present organization. The interest centers in the secondary education of those countries. Lectures, reading and reports. Twice a week. Associate Professor Major.
- Secondary Education (7). The history, curriculum, organization, and administration of secondary education in the United States. The course will be concerned mainly with the problem of the public high school. Twice a week, three terms. Professor Major.

- Educational Classics (8). The aim of this course will be to make critical and comparative study of such classics as Plato's Republic, Rousseau's Emile, Pestalozzi's Leonard and Gertrude, Froebel's Education of Man, Herbart's Science of Education, Spencer's Education. Lectures, reading and reports. Twice a week, three terms. Professor Major.
- Seminary (9). Designed for students who wish to investigate special problems in education. Members of the course will work independently, but will meet once a week for general discussion of some subject under investigation. Open only to students who have worked extensively in either philosophy or education. Three terms, two hours a week. Professor Major.

# English

(University Hall, Rooms 44 and 31.)

For graduate work in this department the student should have a reading knowledge of two languages, besides English, and should have such an acquaintance with English language and literature as is represented by two years of undergraduate study. He should also be familiar with the outlines of English history.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Old English (28). Two hours. Three terms. Assistant Professor McKnight.
- Pre-Chaucerian Literature (30). Three hours. First term. Assistant Professor McKnight.
- Chaucer (31). Three hours. Second term. Assistant Professor McKnight.
- Arthurian Story (32). Three hours. Third term. Assistant Professor McKnight.
- Literary Types (42). Three hours. First and second terms. Associate Professor Taylor.
- Poetics (43). Three hours. Third term. Assistant Professor Graves. American Literature (45). Three hours. First term. Associate Professor Taylor.
- Current Literature (46). Three hours. Second and third terms. Associate Professor Taylor.
- Teachers' Course (48). Two hours. Three terms. Professor Denney. (Not given in 1904-1905.)
- Seminary in Rhetoric (49). Two hours. Three terms. Topic for 1904-5:

  Development of Rhetorical Ideas. Assistant Professor McKnight.
- Seminary in Literary Criticism (50). Two hours. Three terms. Topic for 1905-6: Shakespeare's Early Comedies. Professor Denney. (Not given in 1904-1905.)

- Theories of Rhetoric. Individual work in the investigation of rhetorical problems, or of topics in the history and development of rhetorical theory. Professor Denney.
- Old and Middle English Philology. Selected works are read for the acquisition of methods of philological research. The topic investigated in 1903-4 was the rise of romance and the development of the court allegory. Assistant Professor Mcknight.
- Literary Problems. A series of studies of the fundamental problems of criticism. Lectures followed by investigations of special topics.

  Professor Barrows.
- Comparative Criticism. The development of literary types, the types in English literature being referred to their models in classic or romance literature. The course requires a reading knowledge of French and German and some acquaintance with Greek and Roman literature. In 1903-04 the types studied were the pastoral, the romance and the novel. Associate Professor Taylor.

# European History

(University Hall, Rooms 7 and 36.)

The following courses must be preceded by collegiate courses in Mediæval and Modern European history, and course 4 should be preceded by a good course in general English history. A reading knowledge of French and German will be most helpful.

### FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Period of the Protestant Reformation (7). This course deals with reformational movements from the time of the death of Dante (1321), to the Council of Trent (1562). Three times a week, first term. Professor Siebert.
- The French Revolutionary and Napoleonic Periods, 1789-1815 (8). An intensive study of the cause and effects of the French Revolution, and of Napoleon's struggle with Europe. Three times a week, second term. Professor Siebert.
- History of Europe in the Nineteenth Century (9). Three times a week, third term. Professor Siebert.
- History of European Colonies (10). A study of the colonial enterprises of Portugal, Spain, England, the Netherlands, France and Germany, beginning with the age of geographical discoveries and tracing the evolution of colonies to the present time. Three times a week, first and second term. (Given biennially. Omitted in 1904-05.)

- The Eastern Question (11). An advanced course treating of the relations of European powers with Turkey and Russia. Course 9 gives a special preparation for this course. Three times a week, third term. (Given biennially. Omitted in 1904-05.)
- Constitutional History of France (12). From the ninth to the middle of the eighteenth century. Origin and development of the feudal system in France, growth of the French monarchy, French institutions before the Revolution. Students must be able to read French. Twice a week, three terms. (Given biennially. Omitted in 1904-1905.)
- History of Northeastern Europe (15). This course will deal with Denmark, Sweden, Poland and Russia from the fifteenth century. Twice a week, first and second terms. Professor Siebert.
- Europe and the Asiatic Question (16). Origin and development of the interests of the various European states in the Far East. Twice a week, third term. Professor SIEBERT.
- History of Mediæval Civilization (18). A study of institutions and customs in Western Europe during the Middle Ages; primitive Germanic conditions, social and economic features of the Frankish Kingdom and Empire, monasticism, origin of feudalism, etc. Three times a week, three terms. Dr. McNeal. (Given biennially. Omitted in 1904-1905.)
- The Germanic Invasions (19a). Early history of the Germanic tribes; invasions of the Roman Empire; history of the tribal kingdoms; the history of Western Europe from the second to the seventh centuries. Three times a week, first term. Dr. McNeal.
- Charles the Great (19b). Origin and early history of the Carolingian house; career of Charles; institutions of his Empire; the Carolingian renaissance; dissolution of the Carolingian empire; Western Europe during the eighth and ninth centuries. Three times a week, second term. Dr. McNeal.
- The Feudal System (19c). The conflict of the Empire and the Papacy; the crusades: study of feudalism and the mediæval church; Western Europe from the eleventh to the thirteenth centuries. Three times a week, third term. Dr. McNeal.
- Historical Method and Documentary Sources of the Middle Ages (20).

  Study of special problems and topics. An outline of the principles of historical research and criticism; the bibliography of history; study of mediæval sources, German tribal laws, capitularies, charters, formulæ, etc. Two-hour session, one a week, three terms. Dr. McNeal.
- Investigations of Special Topics in Modern European History (21). Open to those students who are able to satisfy the instructor as to their fitness to pursue the course. Professor SIEBERT.

# Geology

(Orton Hall, Rooms 1, 4, 5, 7, and 13.)

The student before entering upon graduate work in geology should have had the general course in physiography and inorganic and historical geology. If he intends to specialize in Historical Geology he should have had in addition to the above, general courses in zoology and botany; if in Inorganic Geology, then general courses in chemistry, mineralogy and crystallography.

### I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Economic Geology (6). Lectures and assigned reading. The nature of ores, their classification and origin. The metals of the United States, their distribution, abundance, modes of occurrence and origin. The non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. Professor Bownocker.
- Field Geology (13). Field and laboratory study of the geological formations readily accessible from Columbus. This course in intended to acquaint the student with the ordinary methods of field investigation, and involves the preparation of a report describing the region studied. Third term. Field trips Saturdays. Professor Prosser.
- Paleontology (14). Careful training in systematic classification which may be used in the study of the development of plant and animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. Laboratory, museum and field work. Three terms. Professor Prosser.
- Areal Geology (15). Instruction in the methods of preparing geological maps and reports. First and second terms. Field work Saturdays.

  Professor Prosser
- Geographic Geology (18). The origin, development and destruction of topographic forms. Lectures, map work, field excursions. Three times a week, third term. Professor Bownocker.
- Petrography (19). Laboratory and lectures. Optical crystallography, with practical determination of rock-forming minerals, macroscopically and microscopically. Study of the igneous rocks in the hand specimen and thin section. Three terms. Professor Bownocker.

### II. FOR GRADUATES.

Advanced Historical Geology (16). Work in palentology and stratigraphical geology for students who have had courses 13 and 14.

Three terms. Field work and laboratory. Field work to be arranged with individual students. Professor Prosser.

Research Work (20). Field, laboratory and library study in Inorganic or Historical Geology. Outline of work and time to be arranged with individual students. *Three terms*. Preceding courses in Inorganic or Historical Geology are prerequisite. Professor Bownocker or Professor Prosser.

# Germanic Languages and Literatures

(University Hall, Rooms 30 and 32.)

The preparation required for the advanced courses is three years' work, but graduates not taking German as their major work may elect Undergraduate Courses 9 or 10 and by arranging to do under the direction of the head of the department, a larger amount of outside reading than is required of undergraduates, count them toward the requirements for a second degree.

FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Faust 1 and II (11). Three times a week. First and second terms.

  Critical interpretation of the text lectures and recitations. Both parts must be taken. Professor Rhoades.
- Gothic (14). Three times a week. First term. The work is introductory to the historical study of either English or German. Besides systematic work in the grammar a large amount of text will be translated and philological relations emphasized. Assistant Professor VILES.
- Old High German (15). Two hours. Second and third terms.

  This, with Course 17, form a natural sequence to 14. Translation, philological study and outline of the more important literary monuments of the Old High German period. Assistant Professor VILES.
- Old Saxon and Old Norse (17). Once a week. Second and third terms.

  The work follows Course 14 and should be taken in connection with 15. Philological relations are especially emphasized. Assistant Professor VILES.
- Middle High German (16). Two hours. Three terms. Study of grammar followed by reading of the Nibelungenlied, selections from the court epics and from Walter von der Vogelweide. Literary and philological study. Assistant Professor VILES.
- Seminary (26). Contemporary German Drama. Two hours. Three terms. The work is continuous throughout the year and must be so elected in order to count for an advanced degree. Professor Rhoades.
- History of German Literature since the Reformation. Three hours.

  Third term. Lectures and reports on assigned reading. Graduates will present a special study of a single author or movement. Professor Rhoades.

# Greek Language and Literature

(University Hall, Rooms 37, 29 and 28.)

All courses except those in Ancient Art (22 and 23) and Private Life of the Greeks (24) presuppose at least four years' study of the language.

### FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- Thucydides (13). Book I or Book VII. First term. Three times a week. Associate Professor Hodgman.
- Demosthenes: Olynthiacs and Phillippics (14). Second term, three times a week. Associate Professor Hodgman.
- Greek Lyric Poets, or Theocritus (15). Third term. Three times a week.

  Associate Professor Hodgman.
- Attic Drama (16). Lectures and discussions. First term. Twice a week. Associate Professor Hodgman.
- Euripides (17). Two plays. Second term. Twice a week. Associate Professor Hodgman.
- Aeschylus; The Agamemnon (18). Third term. Twice a week. Associate Professor Hodgman.
- Epic Poetry (19). Lectures, with reading of Hesiod's Works and Days. First term. Three times a week. (Not offered in 1904-1905.)
- Greek Comedy (20). Lectures with reading of the Clouds of Aristophanes. Second term. Three times a week. (Not offered in 1904-1905.)
- Post-classical Greek (21). Lucian's Timon, and Dion Chrysostom's Hunters of Euboea. *Third term. Three times a week.* (Not offered in 1904-1905.)
- Ancient Art (22). Lectures on Architecture. First term. Twice a week. (Not offered in 1904-1905.)
- Ancient Art (23). Lectures on Sculpture. Second term. Twice a week. (Not offered in 1904-1905.)
- Private Life of the Greeks (24). Lectures. Third term. Twice a week. (Not offered in 1904-1905.)
- Greek Philosophy (25). Lectures; with readings of Xenophon's Memorabilia. First term. Twice a week. Professor Smith.
- Plato; Gorgias or Protagoras (26). Second term. Twice a week. Professor Smith.
- Studies in New Testament Greek (27). Twice a week, third term. Professor Smith.
- Historical Grammar (28). Lectures on the principles that govern the development of the language. Once a week. Through three terms.

  Associate Professor Hodgman.

- Relations of Greece and Persia (29).; based on the Panegyricus of Isocrates. Twice a week. First term. Professor Smith.
- The Macedonian Supremacy (30); with reading of Arrian's Expedition of Alexander the Great. Twice a week. Second term. Professor SMITH.
- Later Greek Epics (31); The Argonautica of Apollonius Rhodius. Twice a week. Third term. Professor SMITH.

# Latin Language and Literature

(University Hall, Rooms 28, 29, 37.)

Before entering upon graduate work in this department the student should have had, in addition to the usual preparatory course of four years, three years of collegiate study devoted to Cicero, Livy, Horace, Tacitus, Pliny, Latin Comedy, and Latin writing.

The plan of study for the second degree (A. M.), with Latin as the major subject, should not include more than one of the courses 7-17a.

The ability to use French or German works of reference, and a good knowledge of ancient history will be found especially useful. Courses 22, 23 and 24 in Greek are recommended.

### FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Roman Life in the First Century of the Empire (7, 8, 9).

- (7) Tacitus: Historiæ or Annales. Three times a week. First term.
- (8) Juvenal: Satires. Three times a week. Second term.
- (9) Martial: Selected Epigrams. Three times a week. Third term. (The foregoing are not offered in 1904-1905.)

Roman Comedy (10).

(10) Plautus: Menaechmi; Petronius, Cena Trimalchionis. Three times a week. First term. Associate Professor Hodgman.

Roman Ethics and Philosophy (11-16).

- (11) Cicero: De Finibus or De Officiis. Three times a week. Second term. Associate Professor Hodgman.
- (12) Seneca: Medea, De Vita Beata, De Providentia, De Tranquillitate Animi. *Three times a week. Third term.* Associate Professor Hodgman.
- (13) Cicero: De Natura Deorum. Three times a week. First term.
  Associate Professor Elden.
- (14) Lucretius: De Rerum Natura. Three times a week. Second term. Associate Professor Elden.
- (15) Horace: Satires. Three times a week. Third term. Associate

- (16) Horace: Epistles. Three times a week. First term. (Course 16 not offered in 1904-1905.)
- Biography and Descriptive Poetry (17, 17a).
  - (17) Suetonis: Divus Julius and Divus Augustus, or Tacitus, Annals.

    Three times a week. Second term.
  - (17a) Late Latin: Three times a week. Third term. (Courses 17, 17a are not offered in 1904-1905).
- Teachers' Course (18). Twice a week. First term: Cæsar; lectures, private reading, practical exercises in syntax, assigned topics in military antiquities. Second term: Cicero; lectures on Roman oratory and style, rapid reading of selected orations, assigned topics on Roman life and political antiquities. Third term: Vergil; lectures, studies in versification with especial reference to the diction and hexameter of Vergil, interpretation of selected portions of the text. Associate Professor Elden.
- Antiquities (20). Twice a week. Three terms. Roman private life will be studied during the first term. The second and third terms will be devoted to political and legal antiquities, including finance and provincial administration. Professor Derby.
- Latin Literature (21). Twice a week. First and second terms. (Not offered in 1904-1905.)
- Latin Philology (22). Twice a week. Third term. (Not offered in 1904-1905).
- Historical Latin Grammar (23). Sounds and Inflections. This course treats in lectures of the growth of Latin sounds and inflections. There will be collateral reading of inscriptions and from Quintilian. Twice a week, three terms. (Not offered in 1904-1905.)
- Advanced Latin Writing (24). Twice a week. Three terms. (Not offered in 1904-1905.)
- Pro-Seminary (25). This course offers an introduction to the principles of textual criticism and methods of independent research. The work of 1904-1905 will consist of the textual and exegetical study of a portion of the Jugurtha of Sallust, combined with the more rapid reading of other portions. The ability to use German textbooks will be required of students in this course. Three hours a week. Professor Derby.
- Ovid: Fasti (27). A large amount will be read of Ovid's poetical calendar, with its account of the social and religious observances connected with the Roman holidays. Once a week. Three terms. Not offered in 1904-1905.

Historical Latin Grammar (28). Syntax, lectures on problems connected with the origin and development of certain constructions in Latin Syntax; a treatment along historical lines of the syntactic uses of the cases, moods and tenses. Once a week. Three terms. Associate Professor Elden.

### Mathematics

(University Hall, Rooms 39, 41, 43 and 45.)

Prerequisites for the Courses in group I below: One year in college algebra and trigonometry and for the mechanics calculus in addition. For the work in group II, the student must have completed the average college course in algebra, trigonometry, analytical geometry and calculus.

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Analytical Geometry (33). Five times a week, third term. Associate Professor McCoard, Mr. Rasor.

Calculus (41, 42, 43). Five times a week through the year. Associate Professor McCoard, Mr. Rasor.

Mechanics (51, 52, 53). Five times a week through the year. Associate Professor Boyd.

II. FOR GRADUATES.

Higher Mathematics (25). From one to ten hours a week may be selected from the following courses:

(a) Determinants (b) Modern Geometry; (c) Modern Higher Algebra; (d) Advanced Analytical Geometry (Plane); (e) Advanced Calculus; (f) Space Analytics; (g) Differential Equations; (h) Theory of Equations; (i) Higher Plane Curves; (j) Groups; (k) General Function Theory; (l) Elliptic Functions; (m) Potential Function; (n) Spherical Harmonics; (o) Mathematical Electricity; (p) Mathematical Optics; (q) General Mathematical Physics; (r) Higher Geodesy; (s) Infinite Series and Products. Hours to be arranged. Professor Bohannan, Assistant Professors Arnold, Swartzel, Kuhn, Coddington.

# Philosophy

(University Hall, Rooms 33, 49, 50, 51.)

I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.

Most of the following courses are designed primarily for graduate students. But many of them may be pursued with profit by under-

graduates who have had as much as two years of preparation, and a few of them by those who have had but a single year of previous work.

Conspectus of Philosophy (23). Three times a week. First term. Professor Scott.

Theory of Knowledge (24). Three times a week. Second term. Professor Scott.

Metaphysics (25). Three times a week. Third term. Professor Scott. Course 23 proposes a logical survey of the whole field of philosophy, determining the content, boundaries, and relations of its several departments, and investigating as far as time permits the conceptions and problems of each. Courses 24 and 25 constitute a continuous study in fundamental philosophy. Theses will be required during the year, not less than one for each term.

Advanced Psychology (26). Twice a week. Three terms. Dr. Davies. This course will include during the first two terms an analytic and genetic treatment of selected topics; and in the third term the more important psychological theories will be presented and an attempt made to formulate a general theory of mental life.

Research Work in Experimental Psychology (30). Twice a week. Three terms. Hours to be arranged. The psychological laboratory is open to students with suitable preparation to prosecute original investigations. General Psychology and Logic are required as preparation for this work. The arrangement of hours will be subject to the needs of the individual student. At least two hours must be taken. Assistant Professor Haines.

Plato (31). Twice a week. Three terms. Dr. Davies.

Aristotle (32). Twice a week. Three terms. Dr. Davies.

Only one of these two courses will be given each year, but it will be course 31 or 32 as the class may elect.

Descartes and Spinoza (33). Three times a week. First term.

Locke and Leibnitz (34). Three times a week. Second term.

Berkeley, Hume and Teid (35). Three times a week. Third term. Kant, Fichte, Schelling and Hegel (36). Three times a week. Three terms. Dr. Davies.

Courses 33, 34 and 35 constitute one year's work, and alternate with course 36. The first three are preparatory to the last. Assigned portions of the leading works of the thinkers named will be studied and discussed, and an attempt will be made to obtain a clear conception of the author's system as a whole, and of his position on particular important problems of philosophy.

Later German Philosophy (37). Three times a week. Three terms.

Assistant Professor Haines.

- Recent and Current Philosophy (38). Three times a week. Three terms. Assistant Professor Haines.
  - Only one of the two foregoing courses will be given in 1904-1905. Which one shall be given will be decided on consultation with the class.
- Comparative Psychology (42). Two hours a week. Three terms. (Alternates with 46.)
- Scientific Method (43). Two hours. Assistant Professor Haines.
  - A study of the general methods of scientific procedure,—the general methods by which science grows. The more general features of all methods of science which have proved themselves efficient, are the subject matter of the course. Candidates for the work should have an intimate acquaintance with some one science.
- Advanced Ethics (44). Two hours a week. Three terms. Professor Scott. Some of the leading problems and theories of ethics will be studied. It is open only to students who have had elementary ethics.
- Esthetics (45). Two hours a week. Three terms. Dr. Davies. This course will consider the subject of the beautiful from three points of view. 1, Historical. 2, Psychological. 3, Philosophical.
- Abnormal Psychology (46). Two hours a week. Three terms. Assistant Professor Haines.
  - A systematic study of the abnormal states of the human mind. A psychological analysis of the various forms of insanity, for the student of psychology, education and medicine. Defendorf's Clinical Psychiatry will be used as text, supplemented by lectures; and the exceptional facilities which Columbus affords for such work will be utilized. (Alternates with Course 42.)

### II. FOR GRADUATES.

- Philosophy of Science (27). Twice a week. Three terms. Professor Scott.
  - Course 27 has for its purpose to investigate the postulates and concepts of physical science. It will include such subjects as casuality, mechanism and teteology, the existence and nature of matter and mind, the relation between them, man's place in nature.
- Philosophy of Religion (28). Twice a week. Three terms. Professor Scott.
  - This course includes a study of the nature of religion, the foundations or religious beliefs, the relations of philosophy to religion, and religious problems, such as the existence and nature of God, the problem of evil, and human immortality. The two foregoing courses are alternative. Which of them will be given in 1904-

1905 will be decided after consultation with those who elect the work.

- Psychological Seminary (39). A research course for advanced students.

  Two hours a week. Three terms. Assistant Professor Haines.
- Ethical Seminary (40). Two hours a week. Three terms. Professor Scott.
  - This course will be devoted in 1904-1905 to the historical and critical study of one or more of the great problems of ethics. The work will consist of assigned readings, papers and discussions.
- Philosophical Seminary (41). Two hours a week. Three terms. Dr. Davies.
  - This course will undertake a systematic study of the problem of knowledge.

# **Physics**

(University Hall, Rooms 10, 14, 23 and 24.)

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Laboratory (13). Three to five times a week. Three terms. Prerequisites, a year's work in General Physics of college grade and a course in the laboratory. May be taken as a graduate minor. Professor Thomas, Professor Cole.
- Theoretical Physics (14). Three to five times a week. Three terms. For 1904-1905 the following courses are offered:
  - (a) Advanced Light, based upon Preston's "Theory of Light," with frequent reference to the original memoirs of Newton, Fresnel, Young, Fraunhofer, Michelson, Rowland, Stokes, Zeeman, etc. (b) Radiation, with special reference to the electro-magnetic theory of light. (c) Theory of Heat. (d) Theoretical Physics. Christiansen. A course in Differential Equations or Analytical Mechanics is desirable as preparation. (e) Evolution of Experimental Physics, with special reference to recent methods and results.

Prerequisites for each of the above subjects, a year of College Physics and Calculus. A laboratory course in Physics must precede or accompany. Professor Thomas, Professor Cole.

Physical Seminary (16). Discussion of the current literature of physical research, and of assigned topics chosen to illustrate recent progress of the science. *Three terms*. Time to be arranged. Open to those who have had one year of College work in Physics. Professor COLE.

II. FOR GRADUATES.

Advanced Laboratory (15). Three to five times a week. Three terms.

Research work. Prerequisites, two years of laboratory work in Physics. Professor Thomas, Professor Cole.

# Romance Languages and Literatures

(University Hall, Rooms 34 and 35.)

For admission to courses 4 to 13, and 16 to 18, inclusive, in French, the student must have studied that language two full years, four hours a week each year. For admission to courses 14 and 15 in French, the student must have pursued the work for three full years, four hours a week each year.

FRENCH.

### FOR ADVANCED UNDERGRADUATES AND GRADUATES.

- French Comedy (4). Three hours a week. First term. Study of the growth of French Comedy, with work centering upon Molière and Regnard. Lectures and collateral reading. Professor Bowen.
- French Tragedy (5). Three hours a week. Second term. Lectures and readings. Corneille, Racine and Voltaire. Professor Bowen.
- Seventeenth Century Prose (6). Three hours a week. Third term.

  Critical study of Descartes, Pascal, Bossuet and others, supplemented by lectures. Professor Bowen.
- Advanced Prose Composition (7). One hour a week throughout the year.

  Intended for advanced students who desire special training on the practical side of the language. Professor Bowen.
- Literary Criticism in France (8). Two hours a week. First term.

  Readings and lectures. Selections from Sainte-Beuve, Faguet Lemaître and others. (Not offered in 1904-1905.)
- Recent French Prose (9). Two hours a week. Second term. Rapid reading, with lectures. Critical study of some of the leading prose writers of the present, such as Bourget, Daudet, Loti, Zola and others. (Not offered in 1904-1905.)
- Practice in Speaking and Writing French (10). Based on Daudet's Stories. Two hours a week. Third term. Students wishing to elect this course must have the consent of the instructor in charge. (Not offered in 1904-1905.)
- French Travel-Writers (11). Two hours a week. First term. Readings and lectures. Scenes of travel from Gautier, Hugo and Dumas. (Alternates with course 8. Not offered in 1904-1905.)
- Eighteenth Century Prose (12). Two hours a week. Second term.

  Readings and lectures. Selections from Voltaire (ed Cohn and Woodward) or others. (Alternates with course 9. Not offered in 1904-1905.)

- Advanced Conversational Practice (13). Based on stories of Coppée and Maupassant. Two hours a week. Third term. Students wishing to elect this course must have the consent of the instructor in charge. (Alternates with course 10. Not offered in 1904-1905.)
- French Seminary A (14). Two hours a week throughout the year. Given biennially. The subjects for the year 1904-1905 will be: (1) The Development of the French Novel, and (2) Recent Tendencies of French Drama. Towards the close of the year several lectures will be given on Methods of Teaching French and the Teacher's Equipment. Professor Bowen.
- French Seminary B (15). Two hours a week throughout the year. Given biennially. Not offered in 1904-1905. For 1905-1906 the subjects will probably be: (first half-year) Old French (Clédat, Morceaux choisis), with emphasis of la Chanson de Roland (Paris); (second half-year) Sixteenth Century French (Darmesteter et Hatzfeld, Morceaux choisis), with critical study of Montaigne.
- French Comedy of the Eighteenth Century (16). Three hours a week.

  First term. Lectures on the growth of French Comedy, with work centering upon Marivaux and Beaumarchais. (Given biennially. Not offered in 1904-1905.)
- French Society in the Seventeenth Century (17). Three hours a week. Second term. With special reference to the Précieux Movement. Crane's Selections. With lectures. (Given biennially. Not offered in 1904-1905.)
- Precursors of French Romanticism (18). Three hours a week. Third term. Rousseau, Chateaubriand (Bowen's Atala and René) and Madam de Staël. With lectures. (Given biennially. Not offered in 1904-1905.)

# Zoology and Entomology

(Biological Hall, First and Third Floors.)

Students entering upon graduate work in this department are expected to be familiar with the elements of chemistry, physics and botany; to have a reading knowledge of French and German and to have had at least two years' work in zoology, the equivalent of Zoology 1 (general zoology) and Zoology 2 (Comparative Anatomy of Vertebrates). The department can offer good facilities in embryology, neurology and various phases of entomological work.

- I. FOR ADVANCED UNDERGRADUATES AND GRADUATES.
- Invertebrate Morphology I (15). Three or five times a week. First term. Lectures and laboratory. Professor Osborn.

- Invertebrate Morphology II (16). Three or five times a week. Second term. Lectures and laboratory. Professor Osborn.
- Invertebrate Morphology III (17). Three or five times a week. Third term. Lectures and laboratory. Professor Osborn.
- Invertebrate Embryology (18). Three or five times a week. Three terms.

  Korscehlt and Heider used as a basis. Lectures and laboratory.

  Professor Osborn.
- Comparative Neurology (21). Three or five times a week. Three terms.

  Includes study of brain and spinal cord in all classes of vertebrates.

  Edinger Lectures on the Central Nervous System is followed and numerous treatises and special papers consulted. Lectures and laboratory. Associate Professor Landacre.
- Cytology (22). Three or five times a week. Three terms. Hertwig. Cell and Tissues, and Wilson, The Cell in Development and Inheritance. Professor Osborn.
- Entomology (23). Three or five times a week. Three terms. Advanced practical course for those wishing to investigate some special groups of insects or to fit themselves for professional work in Entomology. Lectures, laboratory and field work. Professor Osborn.
- Research Work (25). Five or ten times a week. Time arranged with individual students. Professor Osborn.
- Seminary (26). Discussion of assigned subjects, report on research work, current literature, etc. Advanced and graduate students in the department are expected to register in this course. Once each week, three terms. One hour. Professor Osborn, Associate Professors HINE and LANDACRE.

# THE LIBRARY F THE MAR 25 1931 UNIVERSITY OF ILLINOIS

# Expenses

The incidental fee of eighteen dollars a year is the only fee charged to all students (except those holding scholarships), and is payable one-third at the opening of each term. Such laboratory fees as are charged to students pursuing laboratory courses in science are detailed in the University catalogue. A graduation fee of ten dollars is required of each person receiving one of the higher degrees from the University, and this fee must be paid before the degree is conferred.

The cost of living, which is the chief item of expense, is as reasonable in Columbus as in most college towns. Furnished rooms may be secured at prices ranging from one dollar a week upward, and the cost of table board is from two dollars and twenty-five cents upward. In the matter of expense is much dependent upon the personal taste and habits of the student. There is nothing about the State University requiring a large expenditure of money; economy and careful living are the rule. The University distinctly encourages these things, and will use every means to discourage a lavish expenditure of money as inconsistent with the best interests of the student or of university life.

# Fellowships

To encourage graduates of this University, and of other similar and approved institutions in this State, to continue their studies and to undertake advanced work leading to the higher degrees, the University authorities have established fellowships in several departments. These demand about one-half of the time of the fellow for laboratory or other similar assistance—as far as possible along the line of his graduate study. The remainder of his time is given to graduate work. The fellowships pay from \$250 to \$300 for the University year. At present there are such fellowships in Chemistry, English, Botany, Economics and Zoology, and a few others in the technical and professional colleges.

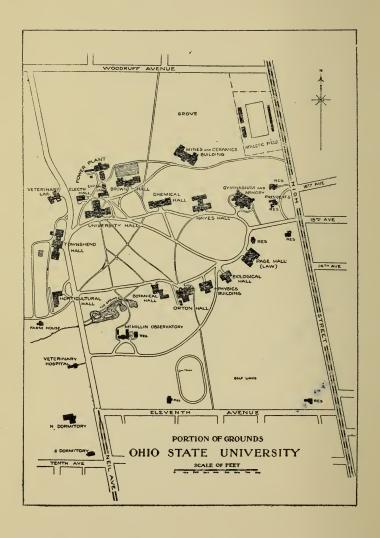
There is also a fellowship endowed by Mr. Emerson McMillin, of New York, known as the Emerson McMillin Fellowship in Astronomy, and having an annual value of \$300. This differs from the University fellowships in that the holder is not required to render assistance in the department, and is expected to devote his entire time to graduate study. Appointments to all fellowships are made annually in April or May for the following year on recommendation of the head of the department.

# Ohio State University Bulletin

Graduate School



PUBLISHED BY THE UNIVERSITY AT COLUMBUS



### UNIVERSITY CALENDAR

1906.

First term begins—Registration Day—Tuesday, September 18.

President's Annual Address—(11 A. M.)—Friday, September 21.

Latest date for admission to candidacy for a degree at the Commencement of June, 1907—October 1.

Latest date for filing subject of Doctor's thesis—November 1.

Latest date for filing subject of Master's thesis—December 1.

First term ends—Wednesday, December 19.

1907.

Second term begins—Registration Day—Wednesday, January 2.

Washington's Birthday—Friday, February 22.

Second term ends-Friday, March 29.

Third term begins—Registration Day—Wednesday, April 3. Latest date for submiting Doctor's thesis—May 1.

Memorial Day—Thursday, May 30.

Latest date for submitting Master's thesis—June 1.

Examination of candidates for higher degrees—June 1-13. Commencement—Wednesday, June 19.

### OHIO STATE UNIVERSITY

The Ohio State University, located at Columbus, is a part of the public educational facilities maintained by the State. It comprises six colleges:

The College of Agriculture and Domestic Science.

The College of Arts, Philosophy, and Science.

The College of Engineering.

The College of Law.

The College of Pharmacy.

The College of Veterinary Medicine.

The Graduate School, to which this bulletin is exclusively devoted, is an organic subdivision of the College of Arts, Philosophy, and Science.

# GRADUATE SCHOOL

### ADMINISTRATIVE BOARD

Professor George Wells Knight, Ph. D., Chairman, 207 University Hall.

Professor Samuel Carroll Derby, A. M., 307 University Hall.

Professor William McPherson, Ph. D., Chemical Hall. Professor Herbert Osborn, M. Sc., Biological Hall. Dean Joseph Villiers Denney, A. B., 116 University Hall.

### ORGANIZATION

Within the last few years the demands upon the University for advanced graduate instruction have increased so rapidly and become so great as to warrant and require a definitely organized graduate department. To meet this demand and to stimulate research the Faculty of the College of Arts, Philosophy, and Science established in 1902 the Graduate School. The object of the School is to emphasize and utilize in highest degree the large facilities which the University affords for advanced students and to secure an effective and systematic arrangement and supervision of the higher work. The Graduate School has no distinct faculty separate from the college of which it is a part, but the work of graduate students within each department of instruction is with but few exceptions carried on under the immediate direction and oversight of the head of the department. Though the Graduate School is organically within the College of Arts, Philosophy, and Science, the supervision and administration of all matters connected with the School have been lodged in the Administrative Board of the Graduate School, consisting of the Dean and four other members chosen from the faculty of the college.

All communications and inquiries regarding matters connected with the Graduate School, whether from prospective students or from those whose work is in progress, should be directed to the Chairman of the Administrative Board.

## FACILITIES FOR GRADUATE WORK

The facilities possessed by the University for study and research are such as to ensure profitable opportunity for advanced and highly specialized work in both scientific and non-scientific fields.

### LIBRARIES

THE UNIVERSITY LIBRARY—The University Library contains sixty-two thousand volumes. There are also department libraries, collections of books specially needed in connection with laboratory and class-room work, deposited in the several departments. During the University year the Library is open six days in the week, vacations and legal holidays being excepted. From Monday until Friday the hours are from 7:30 a. m. until 9:30 p. m.; Saturday from 7:30 a. m. to 4 p. m.

The library of the Ohio Archaeological and Historical Society is also housed at the University, and is readily accessible to advanced students. It contains much material in early and local American history.

STATE LIBRARIES—Students are privileged in being near the two State Libraries. The Ohio State Library numbers more than 90,000 volumes and is a circulating one for all the citizens of Ohio. It is of great value for students, especially in English literature, history, economics, and political science. The State Law Library is the largest and most complete law library in the State. It contains complete sets of the English, Scotch, Irish, Canadian, United States and State Reports, statutes and digests. The important legal periodicals are on file.

CITY LIBRARIES—The students of the University, as residents of Columbus, have access to the City Library and the Public School Library, under the usual regulations. The City Library numbers 37,000 volumes. The Public School Library numbers about 55,000 volumes. Each of these libraries contains much that is useful for graduate students, especially in literature, history, biography, economics, and politics.

### LABORATORIES

The laboratories of the University are the most extensive in Ohio and are well equipped for graduate and special research. The following list of laboratories, which omits those that are exclusively for the professional and technical colleges of the University, gives an indication of the opportunities available for scientific research and investigation:

AT THE UNIVERSITY—Astronomical, Bacteriological, Botanical, Chemical, Entomological, Geological (both Historical and Petrographical), Histological, Physical, Physiological, Psychological, Zoological.

AT SANDUSKY, OHIO—The Lake Laboratory, maintained by the University during the summer, for work in Botany, Entomology, Physiology and Zoology. For graduate students in these lines this laboratory affords exceptional opportunities. Graduate work done at the Lake Laboratory during its regular Summer Term is recognized as done in residence at the University.

### **SEMINARIES**

As a large part of the work of graduate students consists of individual research carried on under the personal direction of the professor in charge, seminaries have been organized in several of the departments to ensure the systematic supervision of such work. By this arrangement

advanced students within a department are brought together once a week for co-operative research and comparison and criticism of methods and results. At present the following seminaries are organized, some of them exclusively for graduates and others for graduates and advanced undergraduates:

American History, Chemistry, Economics, Education, English Literature, English Philology, Ethics, European History, French, German, Latin, Philosophy, Physics, Political Science, Psychology, Rhetoric, Sociology, Zoology.

### SUMMER TERM

The Summer Term of the University begins each year on the Monday following Commencement and continues for six weeks. In some departments of work regular courses for graduates are offered, and in nearly all of the other departments, which are open for students during the Summer Term, it is possible for students who wish to carry on graduate work, whether with a view to a higher degree or not, to arrange for the direction and supervision of such work by the departmental head. The time spent in such work during the Summer Term will be counted as part of the residence time requisite for those who are in candidacy for a degree. By availing themselves of the opportunities afforded in the Summer Term, teachers and others who cannot carry on their graduate work during the regular university year are enabled to prosecute their studies in accordance with a systematic plan. The present bulletin does not contain announcements of Summer Term graduate work, but those interested should correspond with Professor George W. Knight, Chairman of the Administrative Board of the Graduate School, and should send for the Bulletin of the Summer Term.

### **ADMISSION**

Registration as a student in the Graduate School is open to all graduates of the College of Arts, Philosophy, and Science of this University, and to graduates of other colleges of this University, or of other universities or colleges who satisfy the Administrative Board that they are qualified to pursue with profit the work here offered in the lines of study which they wish to carry on.

Graduates of institutions of which the undergraduate courses of study are not substantially equivalent to the course prescribed for the bachelor's degree in the College of Arts, Philosophy, and Science of this University, will be required to do an additional amount of undergraduate work, or to prolong their term of residence, before being

admitted to full candidacy for a higher degree.

Bachelors of this College and other institutions, who do not wish to become candidates for a higher degree, may be admitted as special graduate students.

Application for admittance as a graduate student should be addressed to the Chairman of the Administrative Board of the Graduate School. Full details should be forwarded of the candidate's previous course of study, the degree sought, and the special preparations already had in the lines

of work he desires to pursue here.

As the first question to be decided is whether the baccalaureate degree already taken by the applicant is substantially the equivalent of the degree given in the College of Arts, Philosophy, and Science, full information on this point is required. This should include a general statement of the character of the course pursued, with special reference to the amount of mathematics, science, and the languages, including English. Blank forms of application may be obtained from the Chairman of the Administrative Board.

The second question touches the qualifications of the applicant to enter upon advanced work in the special departments of study in which he desires to work. In order to

determine this, a detailed statement is necessary of the previous course of study in the subjects which the applicant desires to pursue. Official evidence of the above statements must be submitted before the applicant is admitted to full registration.

No graduate student will be registered as a candidate for a higher degree later than October first of the academic year in which he'seeks the degree. Special graduate students, not candidates for a degree, may be registered at the beginning of any term of the academic year.

### COURSE OF INSTRUCTION

FOR CANDIDATES FOR HIGHER DEGREES—Unlike the curriculum for undergraduates, the work of candidates for higher degrees is not confined to specific courses of instruction regularly offered in the College. Each student chooses a major subject and one or two minor subjects, which must be approved by the Administrative Board before he enters upon his work. The work may consist of attendance upon specified courses or of private research or reading and report thereon. The professors in charge of the studies chosen constitute a special committee, the professor in charge of the major study chosen being the chairman, to arrange the details of the work comprising the major and minor studies, to supervise the work of the student, to examine and pass judgment on the thesis, and to conduct a final examination. Upon the completion of the prescribed course a final examination upon the entire work undertaken for the degree is held under the direction of the special committee, except that at the option of the committee the examination upon the minor or minors may be held whenever such minor or minors are completed.

With the approval of the Administrative Board a candidate for a higher degree may elect specific courses, additional to the major and minor studies. For such election any course offered in the College of Arts, Philosophy, and

Science is open to candidates who satisfy the head of the department that they are qualified to pursue it with profit. The amount of such additional elective, if any, which the student may take will in each case be determined by the Administrative Board, and it is to be understood that such work, if allowed, will not be credited towards the degree for which the candidate is working.

For Graduate Students not Candidates for a Degree—Graduate students who are not seeking a higher degree are not required to designate major and minor studies, but may select their work with a view to the special purpose for which they are in attendance at the University. Any course of instruction announced in the College of Arts, Philosophy, and Science is open for election by graduate students not candidates for a degree who satisfy the head of the department that they are qualified to pursue it with profit. But the list of electives so chosen must in each case be approved by the Administrative Board before the student enters upon his work.

Should such student subsequently desire to become a candidate for a higher degree the Administrative Board will determine how much, if any, of the work previously done as a graduate student can be counted as a part of the major and minor studies requisite for the degree sought.

# REQUIREMENTS FOR HIGHER DEGREES

Two higher degrees, Master of Arts and Doctor of Philosophy, are conferred by the University upon the completion of approved courses of resident graduate study in the Graduate School of the College of Arts, Philosophy, and Science.

MASTER'S DEGREE—The degree of Master of Arts is open to those holding the Bachelor's degree who have been admitted to full candidacy as indicated above (see Admission, second paragraph). A residence of at least one year at this University wholly devoted to the work for the degree

is required. With the consent of the Administrative Board the work of candidates for the Master's degree may be distributed over more than one year. The Master's degree is not conferred for study in absentia.

A holder of the Bachelor's degree will be recommended for the degree of Master of Arts upon completing the prescribed term of residence, and passing a final examination in the course of study laid out for him, covering a major and one or two minor subjects approved by the Administrative Board, and, unless waived by the same body, the submission and acceptance of a thesis on some subject within the field of the major study. The major study must be advanced specialized work; the minor study or studies may, with the approval of the Administrative Board, be of a less advanced character.

The subject for the Master's thesis must be chosen and approved by December 1st, and the completed thesis must be submitted not later than June 1st. A typewritten copy of the accepted thesis must be deposited with the University before the candidate will be recommended for a degree.

Doctor's Degree—The degree of Doctor of Philosophy is open to those holding the Bachelor's degree who have been admitted to full candidacy as indicated above (see Admission, second paragraph), and who also fulfill the terms of this and the next paragraph. At least three years of resident graduate work is required, but on approval of the Administrative Board the first year, or the first two years, may be spent at another university which offers equivalent graduate work.

Persons who hold the Master's degree from this University, or for actual resident graduate study at another University offering equivalent graduate opportunities and work, may ordinarily expect to shorten by one year the above requirement as to time and amount of work for the Doctor's degree.

Save in the case of persons who come properly accredited from a graduate school of some other university no student will be fully enrolled as a candidate for the degree of Doctor of Philosophy until he has been in residence as a graduate student at this University for one year. Formal application for enrollment as a candidate for the degree must be made at least one year before the candidate expects to present himself for final examination. No person will be admitted to candidacy for the degree who does not possess at the time of enrollment a reading knowledge of French and German.

Each candidate for the Doctor's degree must pursue a major study and two allied minor studies, one of which may be within the same department as the major. All of them must be advanced, specialized work. The degree is intended to represent not a specified amount of work, covering a specified time, but long study and high attainment in a special field.

Each candidate is required to prepare a thesis within the field of his major study, involving an extended research or investigation and constituting an original contribution to knowledge. The thesis for the Doctor's degree is one of the most essential factors in the candidate's work, since it measures his accuracy and power of independent investigation. The preparation of an acceptable thesis will usually require the greater part of an academic year.

After the acceptance of the thesis the candidate will be examined by his special committee upon the entire work undertaken for the degree, except that at the option of the committee the examination on the minors may be held whenever such minors are completed.

Each candidate is required to have his accepted thesis printed and to deposit fifty copies with the University Library.

The subject of the thesis for the Doctor's degree must be chosen, and approved by the special committee, by November 1st of the college year in which the applicant expects to take the degree. The completed thesis must be submitted not later than May 1st. The final examination will be held not later than June 1st.

### ANNOUNCEMENTS OF THE DEPARTMENTS

The following list presents a brief description of the advanced courses offered in the Graduate School suitable to form constituent parts of "major" and "minor" studies. Discrimination has not been attempted in all cases between purely graduate courses and those which are also open to advanced undergraduates in the College of Arts, Philosophy, and Science. Many of the courses mentioned are of the latter class, but are suited to the needs of many holders of a Bachelor's degree. In occasional instances a course, not listed in this bulletin, but announced as an undergraduate course in the bulletin of the College of Arts, Philosophy, and Science, may be allowed as part of a "minor," but such cases will require specific approval by the Administrative Board.

It should be remembered also that in many cases the work of graduate students consists of individual reading, experiment, investigation, and research in some special line or subject not covered by any announced "course" and not involving or calling for attendance upon lecture or class. Such graduate work is obviously incapable of announcement and description as a "course." For further information as to any course announced on the following pages, and regarding the special work mentioned above, consult the head of the department concerned.

In the following announcements the figure in parenthesis immediately following the subject of the course, is the number of the course as it appears in the University Catalogue.

### AMERICAN HISTORY AND POLITICAL SCIENCE

(Office, Room 207, University Hall.)

The courses in American history named below presuppose a good foundation course of at least a year of collegiate character in the political history of the country from the early colonial period; also a good collegiate course in European history and English political history. At least a fair knowledge of American political institutions is expected.

The advanced work in political science is in all cases closely dependent upon historical knowledge, the amount and kind varying for different courses. In general, the graduate student should have had a collegiate course in modern political institutions, European and American, and in English and American political history. A reading knowledge of French and German is especially desirable.

### 1 AMERICAN HISTORY

### FOR ADVANCED UNDERGRADUATES AND GRADUATES

THE AMERICAN COLONIES, 1600-1763 (2). An advanced course covering the political and institutional development of the colonies; proprietary provinces, corporate colonies, and royal provinces; institutional development in individual colonies, inter-colonial and imperial relations, movements toward federation and independence. Three times a week throughout the year. Assistant Professor Spencer.

The Slavery Struggle and Its Results, 1800-1885 (4). A study of the development and downfall of slavery in the United States, and its relation to and influence upon government, legislation, and political organization. Three times a week throughout the year. Professor Knight.

AMERICAN DIPLOMACY, FOREIGN RELATIONS AND EXPANSION (6). An advanced course comprising an historical study of the foreign relations, problems and policy of the United States, including the acquisitions of territory and their effects on our institutions and government. Three times a week throughout the year. (Given biennially. Not offered in 1906-1907.)

POLITICAL PARTIES IN THE UNITED STATES, 1789-1900 (7). A detailed study of the origin, development and structure of political parties in the United States, with particular attention to their social composition, geographical distribution, organization and methods. Three times a week throughout the year. Assistant Professor Spencer.

SEMINARY FOR RESEARCH WORK IN AMERICAN HISTORY AND POLITICAL SCIENCE (10). Open on permission of the head of the department to those who have had two full collegiate courses in American History and at least one collegiate course in political science. Two hours (at one meeting), three terms. Professor KNIGHT.

THE TEACHING OF AMERICAN HISTORY (11). Lectures, accompanied by abundant library work, on methods of teaching American history in the secondary schools, and on helps, illustrative material and reference reading for teacher and pupil, followed by systematic practice work in the preparation of specified periods of history for class-room use in the high school. Once a week throughout the year. Professor Knight.

THE REVOLUTIONARY AND CRITICAL PERIOD, 1763-1789 (12). The political development resulting in (1) union of the Continental American colonies in a confederation; (2) their independence; (3) their more perfect union defined in the Constitution. Two hours a week throughout the year. (Given biennially. Not offered in 1906-1907.)

### FOR GRADUATES

Graduate Seminary in American History and Institutions (14). Some limited field will be made the subject of co-operative study each year by the seminary. So far as possible, the investigation will be in the sources. The subject for 1906-1907 will be the Reconstruction Period. Two hours a week at one meeting, three terms. Professor Knicht.

INDIVIDUAL INVESTIGATION (13). Each year special courses of varying scope are mapped out to meet the needs of individual graduate students. For 1906-1907, these lines of investigation will lie principally in the Revolutionary and the Reconstruction Periods. Under the personal direction of the instructor each student carries on his reading and investigation independently, reporting at stated intervals to the instructor. Professor Knight.

### II POLITICAL SCIENCE

### FOR ADVANCED UNDERGRADUATES AND GRADUATES

THE GOVERNMENT OF COLONIES AND DEPENDENCIES (6). A study of the government of colonies and dependencies by the home country, of the political and legal relations between them, and of government and administration in dependencies. Twice a week throughout the year. Professor Knight.

MUNICIPAL GOVERNMENT AND PROBLEMS (8). A study of the development, status and government of modern municipalities, a comparative study of recent American municipal charters, and special investigation and consideration of the problems of municipal administration and activities. (Given biennially. Not offered in 1906-1907.)

Seminary (American History 10). For investigation and discussion of political institutions and administration, especially American, national, state, and local. Two hours a week throughout the year. Professor Knight.

ADMINISTRATION IN THE UNITED STATES (13). A study of the government in action, including federal, state, and local administration and their methods. Two hours a week throughout the year. Assistant Professor Tuttle.

ADMINISTRATIVE LAW (14). A study of the methods of different countries for controlling public officers in their relation to the individual; especially a comparison of American methods with those of countries where separate administrative courts are used. Two hours a week throughout the year. (Given biennially. Not offered in 1906-1907.)

Theories of Government, Sovereignty, and Political Liberty (10). An introductory survey of the origin of political theories, followed by an historical study of the political doctrines expressed in American constitutions and a critical examination of these doctrines in the light of recent European and American thought. Twice a week throughout the year. Open also to those advanced undergraduates who have obtained the instructor's permission. (Given biennially. Not offered in 1906-1907.)

COMPARATIVE POLITICS (12). A study of parties and political methods in legislation, administration and elections in the United States, Great Britain and its colonies, France, Germany and the leading European countries. Twice a week throughout the year. Assistant Professor Spencer.

## ANATOMY AND PHYSIOLOGY

(Biological Hall, Rooms 12 and 20.)

The following courses for advanced students presuppose at least one year's collegiate work, including lectures and laboratory work, in Human Anatomy and Physiology and a course in Chemistry, including laboratory work. The work of the graduate student in the following courses will be laid out to meet individual cases when there is a specific end in view, and may be taken in some line in histology, or chemical or experimental physiology.

# FOR ADVANCED UNDERGRADUATES AND GRADUATES

Physiological Laboratory (9). Three times a week throughout the year. Laboratory hours to be arranged. Professor Bleile. Physiological Laboratory (11). Five times a week throughout the year. Professor Bleile.

# **ASTRONOMY**

# (The Emerson McMillin Observatory.)

As a prerequisite for the advanced work in Astronomy the student in addition to a collegiate course in general Astronomy, must have had Mathematics through the calculus. Students wishing graduate work in Astrophysics, as noted below, need not have had the general Astronomy, provided they have had a good collegiate course in the theory of Physics and at least one full year of Laboratory Physics, and Mathematics through the calculus.

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

Astronomy, Geodesy and Least Squares (2). Lectures on practical Astronomy, supplemented by practice with the instruments of the Emerson McMillin Observatory. Three times a week, three terms. Professor H. C. Lord.

ADVANCED ASTRONOMY (4). Lectures, Reading and Laboratory work from three to five hours a week, three terms. Courses will be offered in Theoretical Astronomy or Astrophysics, as students may elect. Professor H. C. LORD.

## BACTERIOLOGY

(Veterinary Laboratory Building.)

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

Bacteriology (5). One lecture, two laboratory periods, of three hours each, weekly throughout the year. First term general; second and third terms special along one of the following lines: a) Pathogenic Bacteria, b) Agricultural, c) Dairy, d) Sanitary Bacteriology and Water Examination, e) Bacterial Chemistry, the products of bacterial action, enzymes, ptomaines, etc. Professor Morrey.

Bacteriology (6). More advanced work on lines of previous course. Five periods a week throughout the year. Professor Morrey.

# BOTANY

# (Office, Botanical Hall.)

As a prerequisite for the first four courses named below, the student must have had work in advanced botany for a full year daily in addition to the elementary botany of the preparatory high school. As a prerequisite for the last three courses named below, the student, in addition to a course in elementary botany, must have had daily work for a year in general Morphology and Physiology, including laboratory work (and for courses 30 and 31 this must include Ecology and Systematic Botany), and also special work for at least a half year preparatory to the graduate work to be undertaken.

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

LABORATORY WORK IN HISTOLOGY AND CYTOLOGY (25). Three to five laboratory periods weekly, three terms. Laboratory open daily. Associate Professor Schaffner.

Advanced Laboratory Work in Histology and Microtechnique (26). Three terms. Laboratory open daily. Associate Professor Schaffner.

LABORATORY AND FIELD WORK IN SYSTEMATIC BOTANY (27). Three to five hours a week throughout the year. Laboratory open daily. Professor Kellerman.

RESEARCH WORK IN SYSTEMATIC BOTANY (28). Three terms. Laboratory open daily. Professor Kellerman.

#### FOR GRADUATES

RESEARCH WORK IN MORPHOLOGY AND CYTOLOGY (29). Three terms. Laboratory open daily. Associate Professor Schaffner.

Monographic Work (30). Three terms. Laboratory open daily. Professor Kellerman.

RESEARCH WORK IN ECOLOGY (31). Three terms. Laboratory open daily. Professor Kellerman and Associate Professor Schaffner.

# **CHEMISTRY**

# (Office, Chemical Hall.)

As a requisite for admission to the following courses, students must have thorough preparation in General Inorganic Chemistry, Qualitative and Quantitative Analysis.

## FOR ADVANCED UNDERGRADUATES AND GRADUATES

Organic Chemistry (8, 9). This course consists of two lectures and six hours laboratory work weekly. First, second, and third terms. Laboratory open afternoons. Professor McPherson.

RARE ELEMENTS (35). Three lectures weekly. First term. Associate Professor Henderson.

PHYSICAL CHEMISTRY (30). Three lectures weekly. Second and third terms. Associate Professor Henderson.

PHYSICAL CHEMISTRY (41). Nine to fifteen hours laboratory work weekly. First, second, and third terms. Laboratory open afternoons. Associate Professor Henderson.

ADVANCED ORGANIC CHEMISTRY (27a). Nine to fifteen hours library and laboratory work weekly. First, second, and third terms. Professor McPherson.

Advanced Inorganic Chemistry (27b). Wine to fifteen hours library and laboratory work weekly. First, second, and third terms. Associate Professor Henderson.

ADVANCED ANALYTICAL CHEMISTRY (27c). Nine to fifteen hours library and laboratory work weegly. First, second, and third terms. Associate Professor Foulk.

#### FOR GRADUATES

CHEMICAL SEMINARY (26). Instructors and advanced students meet once each week for discussion of special topics. First, second, and third terms.

Organic Chemistry (28). Two lectures weekly. Third term. Professor McPherson.

RESEARCH WORK (29). Fifteen to thirty hours library and laboratory work weekly. Three terms. Professor McPherson, Associate Professor Henderson, Associate Professor Foulk.

# ECONOMICS AND SOCIOLOGY

(Office, Room 211, University Hall.)

Students expecting to do graduate work in this department should be well equipped in history and philosophy, and should possess a reading knowledge of French or German, or both. All graduate students who make Economics their major study must have had a thorough course in the elements of Economics, and should, in addition, have had the equivalent of one year's work. Those intending to work in Sociology must have had a thorough course in the elements of Economics and at least a year's work in Sociology. The location of the University in Columbus will be found to be a great advantage for research in economic and sociological lines.

# I Economics

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

INDUSTRIAL ORGANIZATION AND MANAGEMENT (37). The various forms of business undertakings and the methods by which capital and labor are secured and organized for productive purposes are here considered. Especial attention is given to industrial operations, their internal organization, securities, receiverships, and reorganization. Prerequisite, Undergraduate Course 33. Three times a week. First term. Associate Professor Hammond.

INDUSTRIAL CONCENTRATION AND MONOPOLY (38). A discussion of the forces and tendencies which lead to a large scale production. The causes and forms of industrial consolidations. Trust promotion, financiering, and management. The tendency toward monopoly and monopolistic methods. The relation of the state to the monopoly problem and proposed methods of public control of monopolies. Prerequisite, Course 37. Three times a week. Second term. Associate Professor Hammond.

LABOR ORGANIZATIONS AND EMPLOYERS' ASSOCIATIONS (39). A study of the methods by which laborers and employers organize for the purpose of endeavoring to control the labor market. The methods of collective bargaining and the establishment of trade agreements. Prerequisite, Course 38. Three times a week. Third term. Associate Professor Hammond.

The Distributive and Regulative Industries (40). A study of the various methods of marketing goods, and the functions of the various distributors—the manufacturers, manufacturers' agents, brokers, jobbers, traveling salesmen, retailers, etc. Evolution of distributive institutions, study of advertising, of boards of trade, chambers of commerce, stock and produce markets, etc. Prerequisite, Undergraduate Course 33. Three times a week. First and second terms. (Given biennially. Not offered in 1906-1907.)

COMMERCIAL CREDIT (41). A study of the organization of houses for the giving of credit, the history and functions of mercantile agencies, the work of credit men's associations, the history of bankruptcy legislation, etc.; also a study of the various instruments of credit—notes, drafts, bills of exchange, bills of lading, etc. Prerequisite, Course 40. Three times a week. Third term. (Given biennially. Not offered in 1906-1907.)

PUBLIC FINANCE AND TAXATION (42). This course aims to make the student acquainted with the theory of public revenue and expenditure, and with the leading systems of financial administration throughout the world. Text book, Adams's Finance. Lectures. Must be preceded by Undergraduate Course 33. Twice a week. First and second terms. President Thompson.

FINANCIAL HISTORY OF THE UNITED STATES (43). Twice a week. Third term. Must be preceded by Course 42. President Thompson.

Transportation (44). The public character of the transportation industry. The history of transportation. Growth of the railway system and the principal lines of communication. The relation of the railroad to other means of transportation. The organizations and managements of railroads. Railway capitalization. Railway rates, pools, mergers, and consolidations. Railway commissions and public control. Government ownership of railroads. Especial attention is given to the railway problem in the United States. Prerequisite, Undergraduate Course 33. Twice a week. Third term. Associate Professor Hammond.

Money and Banking (34). A study of bi-metalism, convertible and inconvertible money, and the quantity theory of money. An investigation into the principles of banking with special reference to the banking institutions of the United States, a history of banking, and a comparison of the banking institutions of the leading commercial nations. Three times a week. First term.

Banking Practice (35). The bank as a business institution, its form of organization, its system and methods; the methods of different classes of banks and of different banking institutions compared. Three times a week. Second term.

THE MONEY MARKET (36). This course will be devoted to an analysis of the fluctuations of the money market. It will deal with foreign exchange, speculation on the stock and produce markets, the money supply, the work of the bill broker, the concentration of business in the London and New York markets, etc. Three times a week. Third term.

#### FOR GRADUATES

Theories of Taxation (49). This course will be devoted to an intensive study of recent works on the theory of taxation. The object will be to show the origin and historical development of the various theories, their applicability to present conditions and their relation to social and political reforms. While intended primarily for graduates, advanced undergraduates may be admitted to this course by permission of the instructor. Twice a week. Three terms. Associate Professor Hammond.

DISTRIBUTION OF WEALTH (50). In this course will be discussed the fundamental institutions upon which wealth distribution is based, and the views on the distribution of wealth of the various schools of economic thought; the theories of value, rent, interest,

wages, and profits will be considered historically. This course is intended for graduates, but advanced undergraduates may be admitted by permission of the instructor. Three times a week. Three terms. Professor HAGERTY.

Seminary in Economics (45). Open to graduates and advanced undergraduates. This course is recommended to students who have had two or three years' work in Economics. Those contemplating taking the course should arrange for this work in advance and receive their assignments. Twice a week. Three terms. Associate Professor Hammond.

RESEARCH WORK (46). In this work, as far as possible, only original sources are used, and investigations are made from real life. The aim is to set before each student the accomplishment of a task of extending in some degree, however slight, the boundaries of economic and sociological knowledge. Meetings are arranged with the instructor throughout the year. Twice a week. Three terms.

ADVANCED ECONOMICS (47). Open to undergraduates only on permission of the head of the department. The aim of these courses is to offer to the student an opportunity to specialize to any degree he may desire along the various lines within the field of the department. Elections will naturally fall under the following heads: (a) Theoretical Problems, (b) Historical Problems, (c) Practical Problems, (d) Finance, (e) Commerce, (f) Sociology (theoretical or practical), (g) Statistics. Three terms.

# II Sociology

## FOR ADVANCED UNDERGRADUATES AND GRADUATES

Dependents and Defectives (4). This course embraces: (1) A study of poverty and the social conditions responsible for dependency; (2) the slum conditions of the leading American cities and the leading cities of Ohio; (3) outside and inside relief both public and private; (4) the benevolent and educational institutions of Ohio caring for the dependents and defectives. Three times a week. First term. Professor Hagerry.

CRIMINOLOGY (5). A study of criminality, the causes of crime, means of diminishing crime, prison management and prison reform. Prerequisite, Course 4. Three times a week. Second term. Professor Hagerry.

Organized Philanthropy (6). A study of the various institutions or agencies organized to prevent dependency and crime, such as charity organizations, social settlements, the various church agencies, etc. Prerequisite, Course 5. Three times a week. Third term. Professor Hagerry.

Columbus is excellently situated for the pursuit of work indicated in Courses 4, 5, and 6. Trips will be planned to various penal benevolent and reformatory institutions of the city. Practical workers in different fields will lecture to the classes from time to time. These courses are intended to prepare students to do settlement, charity, and general philanthropic work.

THE INDIAN (8). A study of primitive man. Three times a week. First term. Assistant Professor McKenzie.

THE NEGRO (9). A study of tropic man. Three times a week. Second term. Assistant Professor McKenzie.

THE IMMIGRANT (10). A study of race migration, race differences, and race assimilation. Three times a week. Third term. Assistant Professor McKenzie.

Studies are made in Courses 8, 9, and 10 in Race Psychology. An attempt will be made through concrete examples to discover the forces which lie back of the race problems confronting the American people.

Seminary in Sociology (7). This course is recommended to students who have had one or two years' work in Sociology. The work for the ensuing year is outlined as follows: Each alternate meeting will be devoted to the investigation of some social problem of the city of Columbus. At the other meetings sociological literature will be discussed. Hours to be arranged. Twice a week. Professor Hagerty and Assistant Professor McKenzie.

# **EDUCATION**

(Office, Room 407, University Hall.)

The prerequisite for admission to graduate work in the Department of Education is at least a year's study of general Psychology and Logic, or equivalent, and one course for at least a year in Education. All courses run through the year.

## FOR ADVANCED UNDERGRADUATES AND GRADUATES

HISTORY OF EDUCATION (3). This course gives an account of the most important educational movements and systems, beginning with the oldest culture notions and concluding with a study of the present trend of education in this country and Europe. Three hours a week. Professor Major.

Mental Development (4). This course is designed to describe the characteristic features of child mind, to study the principles and empirical data of mental development with special reference to educational theory and practice. Two hours a week. Professor Major.

Science of Education (5). This course aims to develop a consistent theory of education. It is especially intended for students who expect to deal with the larger problems of education which confront the superintendent or principal. Three hours a week. Assistant Professor Haines.

MODERN EDUCATIONAL SYSTEMS (6). A comparative study of education in Germany, England, and France, dealing briefly with the history of these systems, but chiefly with their present organization. The interest centers in the secondary education of those countries. Two hours a week. (Not given in 1906-1907.)

HIGH SCHOOL ADMINISTRATION (7). The history, curriculum, organization, and administration of secondary education in the United States. The course will be concerned mainly with the problems of the public high school. Two hours a week. Professor Major.

EDUCATIONAL CLASSICS (8). The aim will be to make critical and comparative study of such classics as Plato's Republic, Rousseau's Emile, Pestalozzi's Leonard and Gertrude, Froebel's Education of Man, Herbart's Science of Education, Spencer's Education. Two hours a week. Assistant Professor Haines.

Seminary (9). Designed for students who wish to investigate special problems in education. Members of the course will work independently, but will meet once a week for general discussion of some subject under investigation. Open only to students who have worked extensively in either philosophy or education. Two hours a week. Professor Major.

ADMINISTRATION OF PUBLIC EDUCATION (10). This course is intended for those who are preparing for public school principalships or superintendencies. Two hours a week. Professor Major.

## **ENGLISH**

(Office, Room 116, University Hall.)

For graduate work in this department the student should have a reading knowledge of two languages, besides English, and should have such an acquaintance with English language and literature as is represented by not less than two years of undergraduate study. He should also be familiar with the outlines of English history.

# FOR ADVANCED UNDERGRADUATES AND GRADUATES

OLD ENGLISH (28). At first, attention is paid to the purely linguistic features, the relations of early English to the kindred Teutonic languages; later are studied the beginnings of English literature in prose and poetry. Two hours a week throughout the year. Assistant Professor McKnight.

Pre-Chaucerian Literature (30). A rapid survey of the literature of the Old English period, followed by the study, in more detail, of the period from the Conquest to Chaucer. Special stress is laid on the origin of literary genres, the legend, the lay, the fabliau, the romance, and the novel, and on the change from Old English to Modern English methods of versification. Three hours. First term. Assistant Professor Mcknight.

Chaucer (31). A study of the principal works, primarily for their own sake, secondarily in their relations to contemporary French and Italian literature. Three hours. Second term. Assistant Professor McKnight.

ARTHURIAN STORY (32). A study of the origin and development of Arthurian story and of its place in modern art. Authors considered: Geoffrey of Monmouth, Wace, Layamon, Chrétien de Troyes, Malory, Tennyson, Swinburne, Morris, Lowell, Hovey. Three hours. Third term. Assistant Professor McKnight.

The Teaching of English (48). The following topics will be discussed, partly by lecture and partly by reports on assigned readings: Aims of English teaching; class-room methods; the function of criticism; the essay problem; plans for courses; the place of the text-book; the preparation of the teacher; the relation of composition work to the study of English classics; the recommendations of the English conferences; recent treatises on teaching English. Two hours a week throughout the year. (Omitted in 1906-1907.)

Seminary (49). Two hours. Three terms. Topic: The Development of Rhetorical Ideas. Professor Denney.

#### FOR GRADUATES

THEORIES OF RHETORIC (61). Individual work in the investigation of rhetorical problems, or of topics in the history and development of rhetorical theory. Professor Denney.

ENGLISH PHILOLOGY (62). Selected works are read for the acquisition of methods of philological research. Assistant Professor McKnight.

LITERARY PROBLEMS (63). A series of studies of the fundamental problems of criticism. Lectures followed by investigations of special topics. Professor Barrows.

CRITICISM (64). The development of literary types, the types in English literature being referred to their models in classic or romance literature. The course requires a reading knowledge of French and German and some acquaintance with Greek and Roman literature. Associate Professor TAYLOR.

# EUROPEAN HISTORY

(Office, Room 204, University Hall.)

The following courses must be preceded by collegiate courses in Mediæval and Modern European history, and Course 4 should be preceded by a good course in general English history. A reading knowledge of French and German will be most helpful.

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

Period of the Protestant Reformation (7). Reformational movements from the time of the death of Dante (1321), to the Council of Trent (1562). Three times a week. First term. Professor Siebert.

THE FRENCH REVOLUTIONARY AND NAPOLEONIC PERIODS, 1789-1815 (8). An intensive study of the cause and effects of the French Revolution, and of Napoleon's struggle with Europe. Three times a week. Second term. Professor SIEBERT.

HISTORY OF EUROPE IN THE NINETEENTH CENTURY (9). Three times a week. Third term. Professor SIEBERT.

HISTORY OF EUROPEAN COLONIES (10). A study of the colonial enterprises of Portugal, Spain, England, the Netherlands, France, and Germany, beginning with the age of geographical discoveries and tracing the evolution of colonies to the present time. Twice a week. First and second terms. (Given biennially. Not offered in 1906-1907.)

THE EASTERN QUESTION (11). Treats of the relations of European powers with Turkey and Russia. Course 9 gives a special preparation for this course. Twice a week. Third term. (Given biennially. Not offered in 1906-1907.)

Teachers' Course in European History (13). Once a week throughout the year. Professor Siebert.

HISTORY OF NORTHEASTERN EUROPE (15). This course deals with Denmark, Sweden, Poland, and Russia from the fifteenth century. Twice a week. First and second terms. Professor Siebert.

EUROPE AND THE ASIATIC QUESTION (16). Origin and development of the interests of the various European states in the Far East. Twice a week. Third term. Professor SIEBERT.

INVESTIGATIONS OF SPECIAL TOPICS IN MODERN EUROPEAN HISTORY (21). Open to those students who are able to satisfy the instructor as to their fitness to pursue the course. One to ten credit hours. Once a week through the year. Professor Siebert.

ADVANCED WORK IN MEDIAEVAL EUROPEAN HISTORY (22). Topics may be selected from the following list: (a) Mediaeval Civilization; (b) Feudal Institutions; (c) Period of the Renaissance; (d) Study of Mediæval Documents. One to ten hours. Open only on permission of the instructor. Once a week throughout the year. Assistant Professor McNeal.

# **GEOLOGY**

# (Office, Orton Hall.)

The student before entering upon graduate work in Geology should have had the general course in physiography and inorganic and historical geology. If he intends to specialize in Historical Geology he should have had in addition to the above, general courses in zoology and botany; if in Inorganic Geology, then general courses in chemistry, mineralogy, and crystallography.

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

Economic Geology (6). Lectures and assigned reading. The nature of ores, their classification and origin. The metals of the United States, their distribution, abundance, modes of occurrence and origin. The non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. Three times a week. Second term. Professor Bownocker.

FIELD GEOLOGY (13). Field and laboratory study of the geological formations readily accessible from Columbus. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the preparation of a report describing the region studied. Third term. Field trips Saturdays. Professor Prosser.

PALEONTOLOGY (14). Careful training in systematic classification which may be used in the study of the development of plant and animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. Laboratory, museum, and field work. Three terms. Professor Prosser.

Areal Geology (15). Instruction in the methods of preparing geological maps and reports. First and second terms. Field work Saturdays. Professor Prosser and Assistant Professor Hubbard.

Geographic Geology (18). Field excursions, map work, and lectures. Three times a week. Third term. Professor Bow-

Petrography (19). Laboratory and lectures. Optical crystallography, with practical determination of rock-forming minerals, macroscopically and microscopically. Study of the igneous rocks in the hand specimen and thin section. Three terms. Professor Bowney Rev.

#### FOR GRADUATES

ADVANCED HISTORICAL GEOLOGY (16). Work in paleontology and stratigraphical geology for students who have had courses 13 and 14. Field work and laboratory. Field work to be arranged with individual students, and it is recommended that a part of it be done during the summer vacation, under the direction of the instructor in charge. Three terms. Professor Prosser.

RESEARCH WORK (20). Field, laboratory, and library study in Inorganic or Historical Geology. Outline of work and time to be arranged with individual students. Preceding courses in Inorganic or Historical Geology are prerequisite. Three terms. Professor Prosser, Professor Bownocker or Assistant Professor Hubbard.

# GERMANIC LANGUAGES AND LITERATURES

(Office, Room 317, University Hall.)

The preparation required for the advanced courses is three years' work, but graduates not taking German as their major work may elect Undergraduate Course 9 or 10, and by arranging to do, under the direction of the head of the department, a larger amount of outside reading than is required of undergraduates, count them toward the requirements for a second degree.

## FOR ADVANCED UNDERGRADUATES AND GRADUATES

FAUST I AND II (11). Critical interpretation of the text, lectures and recitations. Both parts must be taken. Three times a week. First and second terms. Professor RHOADES.

Gothic (14). The work is introductory to the historical study of either English or German. Besides systematic work in the grammar a large amount of text will be translated and philological relations emphasized. Three times a week. First term. Assistant Professor VILES.

OLD HIGH GERMAN (15). This, with Course 17, forms a natural sequence to 14. Translation, philological study, and outline of the more important literary monuments of the Old High German period. Two hours. Second and third terms. Assistant Professor VILES.

OLD SAXON AND OLD NORSE (17). The work follows the course in Gothic and should be taken in connection with Old High German. Philological relations are especially emphasized. Once a week. Second and third terms. Assistant Professor VILES.

MIDDLE HIGH GERMAN (16). Study of grammar followed by reading of the Nibelungenlied, selections from the court epics and from Walter von der Vogelweide. Literary and philological study. Two hours a week throughout the year. Assistant Professor VILES.

Seminary (26) A. Studies in Classic and Modern Dramatic Literature. The work is continuous throughout the year and must be so elected in order to count for an advanced degree. Two hours a week. Professor Rhoades.

Seminary (26) B. Elements of Phonology, Philology, and Historical Grammar; study of difficult and disputed points in modern German syntax; methods of teaching, with reports on books of reference, texts, etc. Open by permission to teachers and to students preparing to teach. Two hours a week. One session. Professor Rhoades and members of the German Department.

HISTORY OF GERMAN LITERATURE SINCE THE REFORMATION (30). Lectures and reports on assigned reading. Graduates will present a special study of a single author or movement. Three hours. Third term. Professor Rhoades.

# GREEK LANGUAGE AND LITERATURE

(Office, Room 307, University Hall.)

All courses except those in Ancient Art (22, 23, 24), Mediæval Art (32, 33, 34), and Private Life of the Greeks (35), presuppose at least four years' study of the language.

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

THUCYDIDES (13): BOOK I OR BOOK VII. First term. Three times a week. Associate Professor HODGMAN.

Demostheres (14). Olynthiacs and Philippics. Second term. Three times a week. Associate Professor Hodgman.

GREEK LYRIC POETS, OR THEOCRITUS (15). Third term. Three times a week. Associate Professor HODGMAN.

ATTIC DRAMA (16). Lectures and discussions. First term. Twice a week. Associate Professor Hodgman.

Euripides (17): Two plays. Second term. Twice a week. Associate Professor Hodgman.

AESCHYLUS: THE AGAMEMNON (18). Third term. Twice a week. Associate Professor HODGMAN.

EPIC POETRY (19). Lectures, with reading of Hesiod's Works and Days. First term. Twice a week. Professor Smith.

GREEK COMEDY (20). Lectures; with reading of the Bards of Aristophanes. Second term. Twice a week. Professor SMITH.

POST-CLASSICAL GREEK (21). Lucian's Timon, and Dion Chrysostom's Hunters of Euboea. Third term. Twice a week. Professor Smith.

ANCIENT ART (22, 23, 24). Lectures on Architecture and Sculpture. Twice a week throughout the year. (Not offered till 1907-1908.)

Greek Philosophy (25). Lectures; with reading of Xenophon's Memorabilia. First term. Twice a week. Professor Smith.

PLATO (26): Gorgias or Protagoras. Second term. Twice a week. Professor SMITH.

STUDIES IN NEW TESTAMENT GREEK (27). Twice a week. Third term. Professor Smith.

HISTORICAL GRAMMAR (28). Lectures on the principles that govern the development of the language. Once a week. Through three terms. Associate Professor HODGMAN.

RELATIONS OF GREECE AND PERSIA (29); Based on the Panegyricus of Isocrates. Twice a week. First term. Professor SMITH.

THE MACEDONIAN SUPREMACY (30); with reading of Arrian's Expedition of Alexander the Great. Twice a week. Second term. Professor SMITH.

LATER GREEK EPICS (31); the Argonautica of Apollonius Rhodius. Twice a week. Third term. Professor Smith.

Mediaeval Art (32, 33, 34). Lectures on Architecture, Sculpture, and Painting. Twice a week throughout the year. Professor Smith.

PRIVATE LIFE OF THE GREEKS (35). Lectures. Twice a week through the first term. Professor SMITH.

# LATIN LANGUAGE AND LITERATURE

(Office, Room 307, University Hall.)

Before entering upon graduate work in this department the student should have had, in addition to the usual preparatory course of four years, three years of collegiate study devoted to Cicero, Livy, Horace, Tacitus, Pliny, Latin Comedy, and Latin Writing. The plan of study for the second degree (A. M.), with Latin as the major or minor subject, should not include more than one of the Courses 7-19; as a rule, these courses should be taken by undergraduates.

The ability to use French or German works of reference, and a good knowledge of ancient history will be found especially useful. Courses 31, 32, and 33 in Greek are recommended.

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

ROMAN NOVEL (10). Petronius; Apuleius. Twice a week. First term.

SENECA (11). Medea; Dialogues. Twice a week. Second term.

CICERO (12). Tusculan Disputations. Twice a week. Third term.

Courses 10, 11, 12, Associate Professor Hodgman.

Sallust (13). Twice a week. First term.

EPIC POETRY (14). Twice a week. Second term.

HORACE (15): Satires. Twice a week. Third term.

Courses 13, 14, 15, Associate Professor Elden.

Horace (16): Epistles. Twice a week. First term.

TACITUS (17): Annales. Twice a week. Second term.

STATIUS (17a): Silvae. Twice a week. Third term.

Courses 16, 17, 17a, Professor DERBY.

Teachers' Course (18). Lectures, transmission of Latin literature and learning. Caesar; private reading, practical exercises in syntax, assigned topics. Cicero; lectures on Roman oratory and style, rapid reading of selected orations, assigned topics on Roman life and political antiquities. Vergil; lectures, studies in versification with especial reference to the diction and hexameter of Vergil, interpretation of selected portions of the text. Twice a week. Three terms. Associate Professor Elden.

LATIN PROSE COMPOSITION FOR TEACHERS (19). Three times a week. Three terms. Associate Professor Hodgman.

ROMAN ANTIQUITIES: PRIVATE LIFE (20). Once a week. Three terms.

ROMAN ANTIQUITIES: POLITICAL AND LEGAL (20a). Once a week. Three terms.

Courses 20, 20a, Professor DERBY.

ADVANCED SPECIALIZED COURSES (30). One to ten hours. Not more than six hours selected from the following list will ordinarily be given in any year: (a) Latin Literature; (b) Latin Philology; (c) Historical Latin Grammar (Sounds and Inflections); (d) Historical Latin Grammar (Syntax); (e) Advanced Latin Composition; (f) Textual Criticism and Methods of Philological Study; (g) Roman Religion (Fasti of Ovid); (h) Roman Legal Writers: Robinson's Selections; (i) Mediaeval Latin; (j) Inscriptions and Palaeography. Professor Derby, Associate Professor Hodgman, Associate Professor Elden.

Students before planning their election of work from this group of courses should consult the instructors respecting the choice of subjects and the schedule of hours to be arranged.

## **MATHEMATICS**

(Office, Room 314, University Hall.)

Prerequisites for the courses in group I: One year in college algebra and trigonometry and for the mechanics calculus in addition. For the work in group II, the student must have completed the average college course in algebra, trigonometry, analytical geometry, and calculus.

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

ANALYTICAL GEOMETRY (33). Five times a week. Third term. Associate Professor McCoard, Mr. Rasor.

CALCULUS (41, 42, 43). Five times a week throughout the year. Associate Professor McCoard, Mr. Rasor.

MECHANICS (51, 52, 53). Five times a week throughout the year. Associate Professor Boyd.

## FOR GRADUATES

HIGHER MATHEMATICS (25). From one to ten hours a week may be selected from the following courses:

(a) Determinants; (b) Modern Geometry; (c) Modern Higher Algebra; (d) Advanced Analytical Geometry (plane); (e) Advanced Calculus; (f) Space Analytics; (g) Differential Equations;

(h) Theory of Equations; (i) Higher Plane Curves; (j) Groups; (k) General Function Theory; (l) Elliptic Functions; (m) Potential Functions; (n) Spherical Harmonics; (o) Mathematical Electricity; (p) Mathematical Optics; (q) General Mathematical Physics; (r) Higher Geodesy; (s) Infinite Series and Products. Hours to be arranged. Professor Вонаннан, Assistant Professors Arnold, Swartzel, Kuhn, Coddington.

## PHILOSOPHY

# (Office, Room 321, University Hall.)

The prerequisite for graduate work in this department is two years' work of collegiate rank in philosophy and psychology, including one year in psychology and ethics or logic, and one year in the general history of philosophy, or Philosophy 106, 107, 108. A candidate who has done only one year's work toward these requirements, will be permitted to elect a major in this department in the line of that year's work, but only on condition that he bring up, at the same time, the lacking work in the other line, so that he shall have completed it by the time he seeks to qualify for a degree. This last mentioned work can in no case be counted toward a Master's or Doctor's degree. Graduate courses are not necessarily limited to those announced below, but special courses will be provided to meet the needs of candidates.

# I PHILOSOPHY

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

ADVANCED ETHICS (112). Some of the leading problems and theories of ethics will be studied. It is open only to students who have had elementary ethics. Twice a week. Three terms. Professor Scott.

AESTHETICS (115). (1) A study of the origin and development of the sense of beauty through a statement and criticism of the theories of Taine, Schiller, Spencer, Grose, and Groos. (2) The nature of the beautiful (its psychology). (3) The reality of the beautiful and the relation of the ideal of beauty to the problem of God. Twice a week. Three terms. Dr. DAVIES.

PHILOSOPHY OF SCIENCE (118). This course investigates the postulates and concepts of physical science. It will include such subjects as casuality, mechanism, and teleology, the existence and nature of matter and mind, the relation between these, and man's place in nature. Twice a week. Three terms. Professor Scott.

Philosophy of Religion (119). This course includes a study of the nature of religion, the foundations of religious beliefs, the relations of philosophy to religion, and religious problems, such as the existence and nature of God, the problem of evil, and human immortality. The two foregoing courses are alternative. Which of them will be given in 1906-07 will be decided on consultation with those who elect the work. Twice a week. Three terms. Professor Scott.

PHILOSOPHY OF MIND (123). A systematic course in the metaphysics of mind. The nature and reality of mind, mind in nature, plurality of minds, and the unity of mind, are among the topics discussed. The class will read Ladd's "Philosophy of Mind." Twice a week. Three terms. Dr. Davies.

THEORY OF MENTAL DEVELOPMENT (125). Lectures, assigned readings, and a thesis. Deals with the larger theoretical questions which grow out of a consideration of the facts of mental development, such as the relations of the body and mind, the relations of psychical processes among themselves, the significance of the order of the development in the race and in the individual, and especially the significance of the growth of the imagination and inventiveness. Three times a week. Second term. Assistant Professor Haines.

PHILOSOPHY OF EVOLUTION (126). Lectures, assigned readings, and a thesis. The philosophy of nature from an evolutionary point of view, and especially from the standpoint of mental development and evolution. A systematic attempt to assess world theories from the side of the facts of the growth of personality. Three times a week. Third term. Assistant Professor Haines.

ETHICAL SEMINARY (141). This course will be devoted in 1906-07 to the historical and critical study of one or more of the great problems of ethics. The work will consist of assigned readings, papers, and discussions. Twice a week. Three terms. Professor Scott.

PHILOSOPHICAL SEMINARY (142). Subject 1906-07, The Philosophical Concept of God. Individual investigation of aspects of the problem. Reports and theses. Twice a week. Three terms. Dr. Davies,

PLATO (157). Presents Plato's philosophy in its historical relations, and as the most consistent idealism by a Greek mind. Its influence on later Greek thought. An estimate of the idealistic position. Twice a week. Three terms. Dr. Davies.

ARISTOTLE (159). Aristotle's philosophy in its bearings on scientific method, psychology, and metaphysics. The effect of science on Aristotle's thinking, and other similar problems in their modern form. Twice a week. Three terms. (Not offered in 1906-1907.)

Descartes to Kant (161). A systematic account through lectures, recitations, and reports of Rationalism and Empiricism. Selected portions of the works of the several philosophers will be read. Three times a week. Three terms. Dr. Davies,

Kant to Hegel (166). A historical study of German Idealism. Selected portions of the writings of the philosophers will be read, supplemented by recitations, reports, and lectures. Three times a week. Three terms. (Not offered in 1906-1907.)

RECENT AND CURRENT PHILOSOPHY (168). Three times a week. Three terms. Professor Scott.

# II Psychology

(Psychological Laboratory, Office, Room 404, University Hall.)

ABNORMAL PSYCHOLOGY (7). Text, Defendorf's "Clinical Psychiatry." Lectures. Clinical studies at the Columbus State Hospital. Recitations and reports. Three times a week. First and second terms. (Not offered in 1906-1907.)

ANIMAL PSYCHOLOGY (8). Lectures, assigned readings, thesis. A systematic tracing of the known order of mental development through the animal series. Three times a week. Third term. (Not offered in 1906-1907.)

Social Psychology (10). Lectures, assigned readings, thesis. The psychology of personality. Its development. Imitation and invention. Ideals as functioning in personal growth and in leadership. The relations of persons in a group. The genius. The advance of peoples. This course precedes Theory of Mental Development and Philosophy of Evolution. Three times a week. First term. Assistant Professor Haines.

ADVANCED PSYCHOLOGY (14). A theoretical discussion of the problems of individual consciousness, presupposing a knowledge of the facts of mental life as given in the elementary courses in Psychology. Twice a week. Three terms. Dr. DAVIES.

Research in Experimental Psychology (31). Individual investigation of problems. Members of the Psychological Laboratory coöperate with each other, each one serving as observer in the other investigations, and receiving such service in return in his own investigation. The Ohio State University Studies in Psychology, arranged in connection with the Monograph Supplement Series of the Psychological Review, affords a ready avenue for the publication of all worthy results of investigation in Psychology. The laboratory has a fair equipment, and the current expense fund provides for the purchase of apparatus as investigators require it. Two or more times a week. Three terms. Assistant Professor Haines.

PSYCHOLOGICAL SEMINARY (32). Subject for 1906-07, The Psychology of the Feelings. Individual investigation of special problems in this field. Reports, discussions, and theses. One two-hour meeting each week. Three terms. Assistant Professor Haines.

# **PHYSICS**

(Office, Physics Building.)

## FOR ADVANCED UNDERGRADUATES AND GRADUATES

LABORATORY (13). Prerequisites; a year's work in General Physics of college grade and a course in the laboratory. May be taken as a graduate minor. Three times a week. Three terms. Professor Thomas, Professor Cole.

THEORETICAL PHYSICS (14). For 1906-07 the following courses are offered:

(a) Advanced Light, based upon Preston's "Theory of Light," and Drude's "Optics," with frequent reference to the original memoirs of Newton, Fresnel, Young, Fraunhofer, Michelson, Rowland, Stokes, Zeeman, etc. (b) Radiation, with special reference to the electro-magnetic theory of light. (c) Theory of Heat. (d) Theoretical Physics. Christiansen. A course in Differential Equations or Analytical Mechanics is desirable as preparation. (e) Evolution of Experimental Physics, with special reference to recent methods and results. Prerequisites for each of the above subjects,

a year of College Physics and Calculus. A laboratory course in Physics must precede or accompany. Three to five times a week. Three terms. Professor Thomas, Professor Cole, Assistant Professor Kester.

PHYSICAL SEMINARY (16). Discussion of the current literature of physical research, and of assigned topics chosen to illustrate recent progress of the science. Open to those who have had one year of college work in Physics. Three terms. Professor Cole.

#### FOR GRADUATES

ADVANCED LABORATORY (15). Research work. Prerequisites, two years of laboratory work in Physics. Three to five times a week. Three terms. Professor Thomas, Professor Cole.

## **PSYCHOLOGY**

(See Philosophy.)

# ROMANCE LANGUAGES AND LITERATURES (Office, Room 305, University Hall.)

For admission to Courses 4 to 13, and 16 to 18, inclusive, in French, the student must have studied that language at least two full years, four hours a week each year. For admission to Courses 14 and 15 in French, the student must have pursued the work for three full years, four hours a week each year. For the course in Italian the prerequisite is one full year's work, two hours a week; for the courses in Spanish, one year's work, four hours a week. All courses marked "Not offered" are biennial, and may be taken the following year.

# I French

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

French Comedy (4). Study of the growth of French Comedy, with work centering upon Molière and Regnard. Lectures and collateral reading. Three hours a week. First term. Professor Bowen.

French Tragedy (5). Lectures and readings. Corneille, Racine, and Voltaire. Three hours a week. Second term. Professor Bowen.

SEVENTEENTH CENTURY PROSE (6). Critical study of Descartes, Pascal, Bossuet, and others, supplemented by lectures. Three hours a week. Third term. Professor Bowen.

ADVANCED PROSE COMPOSITION (7). Intended for advanced students who desire special training on the practical side of the language. One hour a week throughout the year. Professor Bowen.

PROSE OF THE ROMANTIC PERIOD (8). Readings and lectures. Selections from two or three leading Romanticists. Two hours a week. First term. Associate Professor Bruce.

RECENT FRENCH PROSE (9). Rapid reading, with lectures. Critical study of some of the leading prose writers of recent years, such as Bourget, Daudet, Loti, Zola. Two hours a week. Second term. Associate Professor Bruce.

Practice in Speaking and Writing French (10). Based on Daudet's Stories. Students wishing to elect this course must have the consent of the instructor in charge. Two hours a week. Third term. Associate Professor Bruce.

French Travel-writers (11). Readings and lectures. Scenes of travel from Gautier, Hugo, and Dumas. Two hours a week. First term. (Not offered in 1906-07.)

EIGHTEENTH CENTURY PROSE (12). Readings and lectures. Selections from Voltaire (ed Cohn and Woodward) or others. Two hours a week. Second term. (Not offered in 1906-07.)

ADVANCED CONVERSATIONAL PRACTICE (13). Based on stories of Coppée and Maupassant. Two hours a week. Third term. (Not offered in 1906-07.)

FRENCH SEMINARY A (14). Studies in specific literary fields. The subjects for the year 1906-1907 will be: (1) Recent tendencies of French drama, and (2) some phases of romantic verse. Two hours a week throughout the year. Professor Bowen.

French Seminary B (15). Studies in Old French. Two hours a week throughout the year. (Not offered in 1906-07.)

French Comedy of the Eighteenth Century (16). Lectures on the growth of French Comedy, with work centering upon Marivaux and Beaumarchais. Three hours a week. First term. (Not offered in 1906-07.)

French Society in the Seventeenth Century (17). With special reference to the Précieux Movement. Crane's Selections. With lectures. Three hours a week. Second term. (Not offered in 1906-07.)

PRECURSORS OF FRENCH ROMANTICISM (18). Rousseau, Chateaubriand (Bowen's Atala and René) and Madame de Staël. With lectures. Three hours a week. Third term. (Not offered in 1906-07.)

#### II FOR GRADUATES

Individual Investigation (19). Special courses are planned at the beginning of each year to meet the needs of individual graduate students. These courses follow one of two lines: (1) Literary work in some specific field or author; (2) philological work dealing with the Old French or with the language of the sixteenth century. Each student carries on his investigation independently and reports to the head of the department at weekly conferences. Professor Bowen.

## II ITALIAN

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

ADVANCED ITALIAN (2). The Novel (Manzoni). The Vita Nuova and Inferno of Dante. With lectures. Two hours a week throughout the year. (Not offered in 1906-07.)

# III SPANISH

## FOR ADVANCED UNDERGRADUATES AND GRADUATES

Modern Spanish Literature (2). The Modern Novel and Drama. Lectures covering a survey of the literature. Composition and conversation. Four hours a week throughout the year. Assistant Professor Ingraham.

CLASSICAL PROSE AND DRAMA (3). Cervantes (selections from Don Quixote), Calderón and others. Lectures. Two hours a week throughout the year. Professor Bowen.

# ZOOLOGY AND ENTOMOLOGY.

# (Biological Hall, First and Third Floors.)

Students entering upon graduate work in this department are expected to be familiar with the elements of chemistry, physics, and botany; to have a reading knowledge of French and German and to have had at least two years'

work in zoology, the equivalent of Zoology 1 (general zoology) and Zoology 2 (Comparative Anatomy of Vertebrates). The department can offer good facilities in embryology, neurology, and various phases of entomological work.

#### FOR ADVANCED UNDERGRADUATES AND GRADUATES

Comparative Neurology (21). Includes study of brain and spinal cord in all classes of vertebrates. Edinger's Lectures on the Central Nervous System is followed and numerous treatises and special papers consulted. Lectures and laboratory. Three or five times a week. Three terms. Associate Professor Landacre.

CYTOLOGY (22). Hertwig, "Cell and Tissues," and Wilson, "The Cell in Development and Inheritance." Three or five times a week. Three terms. Professor OSBORN.

Entomology (23). Advanced practical course for those wishing to investigate some special groups of insects or to fit themselves for professional work in Entomology. Lectures, laboratory and field work. Three to five times a week. Three terms. Professor Osborn.

RESEARCH WORK (25). Five or ten times a week. Professor Osborn.

Courses 21, 22, 23, and 25 open to undergraduates who have had two or three years' previous work in this department and cannot, save in very exceptional cases, be taken by any student before the Senior year.

Seminar (26). Discussion of assigned subjects, report on research work, current literature, etc. Advanced and graduate students in the department are expected to register in this course. Once a week. Three terms. Professor Osborn, Associate Professors Hine and Landacre.

#### FOR GRADUATES

INVERTEBRATE EMBRYOLOGY (18). Korscehlt and Heider used as a basis. Lectures and laboratory. Three or five times a week. Three terms. Professor Osborn.

INVERTEBRATE ZOOLOGY (30). Lectures and laboratory. Five times a week. Three terms. Professor Osborn.

Vertebrate Embryology (33). Study of Karyokinesis, germ layers, organegeny, etc. Three or five times a week. Three terms. Associate Professor Landacre.

# **EXPENSES**

The incidental fee of eighteen dollars a year is charged to all students (except those holding fellowships), and is payable one-third at the opening of each term. There is no matriculation fee, nor tuition fee. Such laboratory fees as are charged to students pursuing laboratory courses in science are detailed in the University Catalogue. A graduation fee of ten dollars is required of each person receiving one of the higher degrees from the University, and this fee must be paid before the degree is conferred.

The cost of living, which is the chief item of expense, is as reasonable in Columbus as in most college towns. nished rooms may be secured at prices ranging from one dollar a week upward, and the cost of table board is from two dollars and fifty cents upward. In the matter of expense much is dependent upon the personal taste and habits of the student. There is nothing about the State University requiring a large expenditure of money; economy and careful living are the rule. The University distinctly encourages these things, and will use every means to discourage a lavish expenditure of money as inconsistent with the best interests of the student or of university life.

# **FELLOWSHIPS**

To encourage graduates of this University, and of other similar and approved institutions in this State, to continue their studies and to undertake advanced work leading to the higher degrees, the University authorities have established fellowships in several departments. These demand about one-half of the time of the fellow for laboratory or other similar assistance—as far as possible along the line of his graduate study. The remainder of his time is given to graduate work. The fellowships pay from \$250 to \$300 for the University year. At present there are such fellowships in Botany, Chemistry, Economics, English, French, German, Mathematics, Physiology and Zoology, and a few others in

the technical and professional colleges. Appointments to all fellowships are made annually in April or May for the following year on recommendation of the head of the department.

# HIGHER DEGREES CONFERRED JUNE, 1905. DOCTOR OF PHILOSOPHY

Lumina Cotton Riddle, M. Sc. \*Botany, Zoology, Ecology.

# MASTER OF ARTS.

MARY LOUISE ARNOLD, B. A.

Greek, Latin, French.

Joseph Franklin Clevenger, B. Sc.

Botany, Zoology, Geology.

RAY DURAND CROUT, B. A.

European History, American History, International Law.

Berthold August Eisenlohr, B. Ph.

Germanic Languages, Philosophy.

Walter Fischer, B. Sc.

Botany, Zoology, Physics.

MELLE WILLSON GLASS, B. A.

Greek, Latin, American History.

THOMAS LUTHER HARRIS, A. B. (University of Illinois.) Sociology, Political Science.

Waldo Roy Lebold, A. B. (Heidelberg University.)
Mathematics. Latin.

VELORUS MARTZ, B. A.

American History, Political Science, European History. Mary Aloysia Molloy, B. Рн.

Comparative Philology, German.

<sup>\*</sup>The subjects indicated below each name indicate the work for which the degree was conferred; the first named was the major study in each instance.

MAX DELOS MORTON, B. PH.

American History, European History, Political Science.

Frank Macy Surface, B. A.

Zoology, Botany.

HARLAN HARVEY YORK, B. Sc. (DePauw University.) Botany, Entomology.

## **GRADUATE STUDENTS\***

#### 1905-1906

Beer, James Anderson, B. Sc. 1903, Ashland
Physiology, Chemistry.

Berger, Edward William, Ph. B., Baldwin University, 1894, Ph. D., Johns Hopkins Univ., 1899, Berea

Brown, Harry Gunnison, B. A., Williams Col., 1904, Troy, N. Y. Economics, Sociology.

CONNELL, LAURA J., B. Ph., 1896, Columbus Cox, Lewis Clark, B. A., 1905, Xenia

Mathematics, Astronomy.

DARNER, RALPH WILLIAM, A. B., Wittenberg Col., 1905, Springfield

Chemistry, Metallurgy.

DURRANT, EDWIN POE, A. B., Otterbein Univ., 1904, Westerville Zoology, Physiology, Botany.

ELLIOTT, LUCY CABLE, B. A., Mt. Holyoke College, 1904, Columbus Erb, Theresa, B. A., 1904, Feiel, Ida Louise, B. Ph., 1898, Columbus

Frankham, Charles R., A. B., Otterbein Univ., 1896,

A. M., 1903, LL. B., 1904, Westerville PHART, WILLIAM F., B. A., 1905, Williamsport

GEPHART, WILLIAM F., B. A., 1905, Economics, Political Science.

GOODRICH, WILLIAM R., A. B., Univ. of Mich., 1904, Marshall, Mich. German, French.

GRIGGS, ROBERT F., B. Sc., 1903, Columbus

Botany, Zoology.

HAMBLETON, JAMES C., A. B., Macalester College, 1889, Columbus Botany, Zoology.

<sup>\*</sup>The subjects constituting the work of candidates for higher degrees are indicated under their names. The subject first named is the major study.

HARLOR, JOHN DAVID, B. A., 1895, Columbus HERMS, WILLIAM B., B. Sc., German Wallace Col., 1902, Columbus Zoology, Botany. Hughes, Herbert Moore, A. B., Miami Univ., 1904, Liberty, Ind. German, French. JACKSON, CICERO FLOYD, A. B., DePauw Univ., 1905, La Fayette, Ind. Zoology, Bacteriology. JACKSON, GERTRUDE SEE, B. A., 1904, Portsmouth Romance Languages, English. JAMES, ROSALIE TELFAIR, A. B., Bryn Mawr Col., 1903, Coshocton KINDLE, JOSEPH HENRY, B. A., 1905, Centerville Mathematics, Astronomy. KNOTE, JOHN M., JR., A. B., Wittenberg Col., 1904, Springfield Chemistry, Geology. LINDER, WILLIAM V., A. B., Wabash Col., 1905, Crawfordsville, Ind. Chemistry, Bacteriology. Long, Charles Ford, A. B., Miami Univ., 1903, Tackson Chemistry, Metallurgy. Martz, Velorus, B. A., 1901, A. M., 1905, Columbus MERRELL, HOWARD B., A. B., Columbia Univ., 1902, English, Education, Philosophy, Upper Montclair, N. J. Moore, Paul Guthrie, A. B., Miami Univ., 1905, South Salem Chemistry, Physics. PENCE, RAYMOND W., B. A., 1905, Columbus Latin, Greek, German. Pratt, Edna S., B. A., 1904, Columbus Sociology, English. RICHARDSON, EDITH H., B. A., Mt. Holyoke Col., 1903, Columbus English, German. Ruppersberg, Emma A., B. Sc., 1901, M. Sc., 1896, Columbus Physics, Chemistry. SCOTT, DAISY MEDILL, B. A., 1887, Columbus STAUFFER, CLINTON R., B. Sc., 1903, Columbus Geology, Zoology. Columbus Stewart, Louise Elliott, B. L., O. W. Univ., 1892, Greenville TILLMAN, OPAL IONE, B. Sc., 1905, Botany, Zoology. TIPTON, WILLIAM H., B. A., 1905, Caldwell American History, Political Science.

VOGT, CLARENCE C., A. B., Wooster Univ., 1904,

Chemistry, Physics.

Zanesville



The Ohio State University Bulletin is published fifteen times during the academic year, as follows: Monthly in October, November and June, and bi-weekly in December, January, February, March, April, and May. Entered as second-class matter November 17, 1905, at the Post Office at Columbus, Ohio, under Act of Congress, July 16, 1894.